			Deliverab	ole Review Form		
1	Project Informati	on:		3.00		
	Project Name:	Olin Chemical Supe	rfund Site	14000 - 1700 - 1		
	Project Number:	6107-11-0016		Project Manager:	Peter Thompson	n
1	Document Name:	Data Validation Rep	ort - August 201	1 Slurry Wall / Cap		
		on Number:		Revision Date:		
	Prepared By:					
2	Tochnical Pavious	y. This document ha	s been independ	antly reviewed for tech	nical adequacy, val	idity, feasibility, continuity,
-						of this document has been
	Subject Area(s):	Initial Data Validatio				
	Printed Name:	Wolfgang (alicehio			
	Signature:	25	melile	-G	Date:	10/14/11
	Subject Area(s):	Senior Data Validati	on ,			
	Printed Name:	Chris Kica				, 1
i.e.	Signature:	Chris Ru			Date:	16/14/11
	Subject Area(s):	QC Review				1 1
	Printed Name:	Kelly Cha	Herton			
	Signature:	Bethy Ch	atterin		Date:	11/14/11
3	Tables/Figures/A	ppopulions (includin	a calculations)	Pavious Independent	5	nical adequacy, continuity,
ľ	and conformance	to regulatory requirem	nents and accept	ed professional standa	ards (use back of for	rm if more room is needed).
	Reviews performe	- 15	november			
		ables/Figures/Append		ole 1 - Sample Summa		
	Created by: Mc	KJC 09/16/11	Checked by:	Admille	Date:	9/21/11
	List of reviewed Ta	ables/Figures/Append		ole 2 - Final Results Su	ımmary	
	Created by:	hic 9/22/11	Checked by:	John Elli	Date:	10/14/11
	List of reviewed Ta	ables/Figures/Append	lices: Tab	ole 3 - Validation Qualif	fication Action Sumi	mary
	Created by:	his glasty	Checked by:	Momelle	Date:	10/14/11
	List of reviewed Ta	ables/Figures/Append		,		
	Created by:		Checked by:		Date:	
COLUMN TO SERVICE	ta Alaha I	Committee to the state of the state of		A	art of Hitchian Control	0 - 21 - 12 - 120
4				nt has been reviewed a and document quality		elease and is in
	Print Name:	Peter Thompson				
	Signature:				Date:	
5	Certifying Project	t Principal: certify	that this docume	nt has been reviewed a	and edited prior to r	elease and is in
				and document quality		
	Print Name:	Michael Murphy				1
	Signature:	mym	mpmy		Date: _	10/10/11
6	Policy ES-4 Cont	ract Requirements:	Contract ≤ Cor	tract, Subcontract,	Work Order, Cha	nge Order, or PO
	NA NA	0				
		Standard Contract Non-Standard Contract	ct * and was che	cked & stamped by an	OCA or MACTEC A	Attorney
*				1724(23		reviewed by an OCA. See
		-7 and LD-30 for more		are, standard company	John dow offen De	.55.16d by all 00/1. 666
				ct first, then return th ent, and stamps one		

Back of form to be completed by Annette\Project Assistant.

	Deliverable Review Form (Continued)
(E	Sections 7-9 to be Completed by Annette\Project Assistant
7	Copy Editing: This document has been checked to ensure correct spelling, grammar, and word usage; completeness (no missing text, figures, tables); accuracy (index, page numbers, internal references); continuity of style; and conformance to specified format and style requirements (whether MACTEC format or client requested format). Copy editing of this document was performed by: Print Name: Annette Savastano Date: Date:
8	Policy ES-4 Requirements (Proposals, Reports & Other Client Deliverables): Check all that apply below.
	MACTEC's copy is a "duplicate original" of the client's original and is stamped "File Copy" This is a Draft - Transmittal signed by Principal is attached to Client's & MACTEC's File Copy This is a Final - Project Manager & Principal wet signatures on Client's & MACTEC's File Copy And all Tables/Figures/Appendices have wet initials for Reviewed By/Checked By per QA Policy This is a PDF electronic delivery sent via email. A printout of the deliverable that was sent to client and a copy of the transmittal email sent to the client is attached to the printout and stamped File Copy If Absentee Signature was used - Approval from absentee is attached to File Copy (see policy update below). Absentee Signature Policy Update - The authorized employee should sign their own name and the phrase "for with permission." Documentation of permission to sign must be included with File Copy.
9	Timeliness Database: X NA
	Original Deliverable Due Date: Actual Delivery Date:
	Variance Explanation (if applicable):

AMEC Environment & Infrastructure

107 Audubon Road, Building 2, Suite 301 Wakefield, Massachusetts 01880 Phone No.: (781) 245-6606 FAX No.: (781) 246-5060

					ΓRΑ	NSMIT	TAL LETTE	R						
To:	James Cashv	vell					Date:	Oc	tobe	er 20, 2011				
	Olin Corporat	ion					Client:	Oli	n					
	3855 North (Ocoee Street					Project:	51	Ean	nes Street, Wilmington, MA				
	Suite 200													
	Cleveland, Te	ennessee 373	312				AMEC PN: 6107-11-0016.12							
							Delivery: U.S.P.S.							
⊠ in	formation	☐ purc	hasing	REM	ARK	S: En	closed plea	ase f	ind 1	the following data validation summary				
□ es	timating	□ cons	truction	report (on CD) for the 51 Eames Street, Wilmington, MA property.										
Псс	mments and/or appro	oval □ see r	ramarke	Please feel free to contact Mike Murphy at (781) 245-6606 if you have										
	minerità diloyor appi	ovai 🗀 300 i	12010200021							sed report.				
							nnette Sa							
	Number Revision No. of No. Copies								-	or Description				
	Water, C						emical Sup	erfu	nd S	O11 Slurry Wall Groundwater and Surface Site, Wilmington, Massachusetts, ets: 360-35962-1 and 360-35898-1				
										(a)				
	DISTRIBUTION:	T = TRANSMITT	TAL LETTER; C = C	OPY OF	Doci	UMENT								
				T	С			Т	С					
	Guichard, Olir	n Wilmington	(CD)	X	X									
AME	C Project File			X	Χ									
					_									



To: James Cashwell From: Chris Ricardi Date: October 17, 2011

Subject: Interim Response Steps Work Plan Slurry Wall Monitoring Program 3Q11- August

2011

DATA VALIDATION REPORT
AUGUST 2011 SLURRY WALL GROUNDWATER AND SURFACE WATER
OLIN CHEMICAL SUPERFUND SITE
WILMINGTON, MASSACHUSETTS
TestAmerica Laboratories Data Sets 360-35962-1 and 360-35898-1

1.0 INTRODUCTION

Groundwater and surface water samples were collected from the Olin Chemical Superfund Site from August 23 – 25, 2011. Samples were analyzed by TestAmerica Laboratories in Westfield, Massachusetts. Data were reported in sample delivery groups (SDGs) 360-35962-1 and 360-35898-1. A summary of samples included in this review is contained in Table 1. Samples reviewed in this report were analyzed for the following USEPA SW-846 (USEPA, 1996), USEPA wastewater (USEPA, 1993), or Standard Methods (APHA, 1995):

- dissolved metals (aluminum and chromium) by USEPA Method 6010B in groundwater
- dissolved and total metals (aluminum, chromium, and sodium) by USEPA Method 6010B in surface water
- general chemistry analyses for ammonia by USEPA Method 350.1 (Lachat 10-107-06-1), chloride, nitrate, nitrite, and sulfate by USEPA Method 300, and specific conductance by SM 2510B

The Final Interim Response Steps Work Plan (MACTEC, 2007) and the MassDEP Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP) [MassDEP, 2010] were used as references during the review. Analytical packages were reviewed using the Level 1 Data Quality Evaluation checklists that were developed for the Olin Wilmington monitoring tasks. Final sample results are presented on data summaries in Table 2. A summary of validation qualification actions is presented on Table 3 for results that were qualified. Validation reason codes are associated with final results that have been qualified as indicated in Table 3.

2.0 METALS

Data were reviewed for the following parameters:



- Data Completeness
- * Holding Time Blanks
- * Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis
- * Matrix Spike Analysis
- * Field Duplicate Results
- Detection Limits
 Dissolved vs. Total Metals Comparison
- * = indicates that criteria were met for this parameter

Blanks

SDG 360-35898-1

Sodium (355 μ g/L) was reported in the dissolved method blank associated with samples in SDG 360-35898-1. An action level was established at five times the reported method blank dissolved sodium concentration. All dissolved sodium sample results were greater than the action level and no qualification action was required.

Dissolved vs. Total Metals Comparison

Dissolved sodium concentrations were over ten percent greater than total sodium concentrations in a subset of surface water samples in SDG 360-32829-1 as presented in the table below. The results for total and dissolved sodium in these samples were qualified estimated J.

					%	
					Dissolved	
					amount is	
				Sodium	greater	
				result	than Total	Final
SDG	fraction	lab_sample_id	field_sample_id	(μg/L)	amount	Qualifier
360-35898-1	Dissolved	360-35898-1	OC-SW-ISCO1	90000	23	J
360-35898-1	Total	360-35898-1	OC-SW-ISCO1	73000	23	J
360-35898-1	Dissolved	360-35898-2	OC-SW-ISCO2	190000	27	J
360-35898-1	Total	360-35898-2	OC-SW-ISCO2	150000	21	J
360-35898-1	Dissolved	360-35898-3	OC-SW-ISCO3	99000	21	J
360-35898-1	Total	360-35898-3	OC-SW-ISCO3	82000	۷۱	J
			OC-SW-PZ-			
360-35898-1	Dissolved	360-35898-4	16RRSW	200000	25	J
			OC-SW-PZ-		25	
360-35898-1	Total	360-35898-4	16RRSW	160000		J



					% Dissolved	
					amount is	
				Sodium	greater	
				result	than Total	Final
SDG	fraction	lab_sample_id	field_sample_id	(μg/L)	amount	Qualifier
			OC-SW-PZ-			
360-35898-1	Dissolved	360-35898-5	17RRSW	190000	19	J
			OC-SW-PZ-		19	
360-35898-1	Total	360-35898-5	17RRSW	160000		J
			OC-SW-PZ-			
360-35898-1	Dissolved	360-35898-6	18RSW	89000	33	J
			OC-SW-PZ-		33	
360-35898-1	Total	360-35898-6	18RSW	67000		J
360-35898-1	Dissolved	360-35898-7	OC-SW-SD-17	140000	46	J
360-35898-1	Total	360-35898-7	OC-SW-SD-17	96000	40	J

3.0 GENERAL CHEMISTRY – Ammonia, Chloride, Sulfate, Nitrate, Nitrite, and Specific Conductance

Data were reviewed for the following parameters:

- * Data Completeness
- * Holding Time
- * Blanks
- * Matrix Spike Analysis
- * Field Duplicate Analysis
- Laboratory Duplicate Analysis
- Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis
 Detection Limits
- * = indicates that criteria were met for this parameter

Except for the validation actions noted above, the results are interpreted to be usable as reported by TestAmerica.

Detection Limits

SDGs 360-35898-1

The case narrative states that due to chloride co-elution, samples OC-SW-ISCO1, OC-SW-ISCO2, OC-SW-ISCO3, OC-SW- PZ-16RRSW, OC-SW- PZ-16RRSW, and OC-SW- SD-7 were analyzed at ten-fold dilution. Nitrite reporting limits were elevated accordingly.



Chris Ricards	10/17/2011
Chris Ricardi, NRCC-EAC Senior Chemist	Date
mg Murphy	10/17/11
Michael Murphy Project Principal	Date

References:

- American Public Health Association (APHA), 1995. "Standard Methods for Examination of Water and Wastewater"; 19th Edition; APHA, 1015 Fifteenth St., NW., Washington, D.C. 20005.
- MACTEC Engineering and Consulting, Inc. (MACTEC), 2007. "Final Interim Response Steps Work Plan"; Olin Chemical Superfund Site; 51 Eames Street, Wilmington, Massachusetts; August 8, 2007.
- Massachusetts Department of Environmental Protection (MassDEP), 2010. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; July 2010.
- U.S. Environmental Protection Agency (USEPA), 1993. "Methods for Chemical Analysis and Water and Wastes (MCAWW)", EPA/600/4-79-020 (March 1983) with updates and supplements EPA/600/4-91-010 (June 1991), EPA/600/R-92-129 (August 1992) and EPA/600/R-93-100 (August 1993).
- USEPA, 1996. "Test Methods for Evaluating Solid Waste"; Laboratory Manual Physical/Chemical Methods; Office of Solid Waste and Emergency Response; Washington, DC; SW-846; November 1986; Revision 4 -December 1996.

Table 1
Sample Summary
Data Validation Report
August 2011 Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site

Wilmington, Massachusetts

				SW846 6010B	SW846 6010B	E350.1 (QuickChem		40CFR136A
	1 12	O a serve for ID	Osmanla Data	Total	Filtered	10-107-06-1-B)	A2510B	300.0
Lab Sample ID Groundwater	Location	Sample ID	Sample Date					
	CM 2020	OC CW 2020	0/04/0044		2	4	4	2
360-35962-1	GW-202S	OC-GW-202S	8/24/2011		2	1	1	2
360-35962-2	GW-202D	OC-GW-202D	8/24/2011		2	1	1	2
360-35962-3	GW-25	OC-GW-25	8/25/2011		2	1	1	2
360-35962-4	GW-78S	OC-GW-78S	8/24/2011		2	1	1	2
360-35962-5	GW-79S	OC-GW-79S	8/24/2011		2	1	1	2
360-35962-6	PZ-16RR	OC-PZ-16RR	8/24/2011		2	1	1	2
360-35962-7	PZ-17RR	OC-PZ-17RR	8/24/2011		2	1	1	2
360-35962-8	PZ-18R	OC-PZ-18R	8/25/2011		2	1	1	2
360-35962-9	PZ-24	OC-PZ-24	8/25/2011		2	1	1	2
360-35962-10	PZ-25	OC-PZ-25	8/25/2011		2	1	1	2
Surface Water								
360-35898-1	ISCO1	OC-SW-ISCO1	8/23/2011	3	3	1	1	4
360-35898-2	ISCO2	OC-SW-ISCO2	8/23/2011	3	3	1	1	4
360-35898-3	ISCO3	OC-SW-ISCO3	8/23/2011	3	3	1	1	4
360-35898-4	PZ-16RR	OC-SW-PZ-16RRSW	8/23/2011	3	3	1	1	4
360-35898-5	PZ-17RR	OC-SW-PZ-17RRSW	8/23/2011	3	3	1	1	4
360-35898-6	PZ-18R	OC-SW-PZ-18RSW	8/23/2011	3	3	1	1	4
360-35898-7	SD-17	OC-SW-SD-17	8/23/2011	3	3	1	1	4

Notes:

Number listed under method indicates number of target analytes reported.

Prepared by / Date: KJC 09/16/11

Checked by / Date: WDC 09/21/11

Table 2

Final Results Summary Data Validation Report

August 2011 Slurry Wall / Cap Groundwater and Surface Water

Olin Chemical Superfund Site Wilmington, Massachusetts

			Loc Name	GW-2	02D	GW-2	202S	GW	-25	GW-	78S	GW-	79S	PZ-16RR		PZ-17RR			
			Field Sample ID	OC-GW-202D		OC-GW	V-202S	OC-GW-25		OC-GW-78S		OC-GW-79S		OC-PZ-16RR		OC-PZ-17RR			
		1	Field Sample Date	08/24/11		08/24/11		08/25/11		08/24/11		08/24/11		08/24	1/11	08/24/11			
	QC Code		FS		F	S	FS		FS		FS		F	3	FS	3			
		Lab Samp	ole Delivery Group	360-35	962-1	360-35	360-35962-1		962-1	360-35962-1		360-35962-1		360-35962-1		360-35962-1			
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual		
F	SW6010	Aluminum	ug/l	12000		100	U	100 U		55 、	55 J		U	100 U		22 -	J		
F	SW6010	Chromium	ug/l	930		4.4	J	1.8	1.8 J		1.8 J 14		19		5.4		11		
N	E300	Chloride	mg/l	310		60		100	100		100		23		190		220		
N	E300	Sulfate	mg/l	1900		380		91		430		1000		720		440			
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	190		62	62		39		39 39		39 97		160		32		
Ν	N A2510B LAB SPECIFIC CONDUCTANC umhos/cm		4800		1300		760		1200		3000		3000		1400				

Notes:

N = normal

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Table 2

Final Results Summary Data Validation Report

August 2011 Slurry Wall / Cap Groundwater and Surface Water

Olin Chemical Superfund Site Wilmington, Massachusetts

			Loc Name	PZ-1	18R	PZ-	·24	PZ-	25
			Field Sample ID	OC-PZ	Z-18R	OC-P	Z-24	OC-PZ-25	
		F	ield Sample Date	08/2	5/11	08/25/11		08/25	5/11
			FS	S	F	S	FS	3	
		Lab Samp	le Delivery Group	360-35	962-1	360-35	962-1	360-35	962-1
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	100	U	15	J	100	IJ
F	SW6010	Chromium	ug/l	12		21		9.3	
N	E300	Chloride	mg/l	110		23		22	
N	E300	Sulfate	mg/l	60		710		420	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	33		61		43	
N	A2510B	LAB SPECIFIC CONDUCT	ANCI umhos/cm	810		2000		1400	

Prepared by / Date:

Checked by / Date:

KJC 09/22/11

WDC 09/26/11

Notes:

N = normal

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Table 2 Final Results Summary Data Validation Report

August Slurry Wall / Cap Groundwater and Surface Water

Olin Chemical Superfund Site Wilmington, Massachusetts

			Loc Name	ISC	O1	ISC	O2	ISC	O3	PZ-16	SRR	PZ-17	'RR	PZ-1	8R	SD-	17
		Fie	eld Sample ID	OC-SW-	-ISCO1	OC-SW-	ISCO2	OC-SW	-ISCO3	OC-SW-PZ-	16RRSW	OC-SW-PZ-	17RRSW	OC-SW-PZ-18RSW		OC-SW-SD-17	
		Field	Sample Date	08/23	08/23/11 0		3/23/11 08/23/11		3/11	08/23/11		08/23/11		08/23/11		08/23	3/11
			QC Code	FS	S	FS		F:	S	FS		FS		FS		FS	3
		Lab Sample De	elivery Group	360-35	898-1	360-35	898-1	360-35	898-1	360-35898-1		360-358	398-1	360-35	898-1	360-358	898-1
Frac	Method	Analyte	Units	Result	Qual	Result	Qual	Result	Result Qual		Result Qual		Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	40 .	J	36 、	J	100	U	1500		1400		36	J	920	
F	SW6010	Chromium	ug/l	8.6		13		5	U	490		600		8.2		280	
F	SW6010	Sodium	ug/l	90000	J	190000 、	J	99000	J	200000 J		190000 J		89000 J		140000 、	J
N	E300	Chloride	mg/l	110		170		200		190		190		110		130	
N	E300	Nitrate as N	mg/l	0.08		0.79		0.7		0.39		0.18		0.078		0.16	
N	A4500_NO2_B	Nitrite as N	mg/l	0.1	U	0.1	U	0.1	U	0.1 (J	0.1 L	J	0.01	U	0.1 l	J
N	E300	Sulfate	mg/l	130		580		22		620		600		130		240	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	37		98		1.7		110		110		33		41	
N	A2510B	LAB SPECIFIC CONDUCTANCE	umhos/cm	790		2200		800		2300		2200		790		1100	
Т	SW6010	Aluminum	ug/l	150		230		53	J	1900		5700		140		1200	
Т	SW6010	Chromium	ug/l	16		51	51 1.2 J 560		1.2 J 560		1300		15		280		
Т	SW6010	Sodium	ug/l	73000	J	150000 、	J	82000	J	160000 、	J	160000 J	l	67000	J	96000 .	J

Notes:

N = normal

T = total (unfiltered)

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Prepared by / Date:

Checked by / Date:

KJC 09/22/11

WDC 09/26/11

Table 3

Validation Qualification Action Summary Data Validation Report

August 2011 Slurry Wall / Cap Groundwater and Surface Water Olin Chemical Superfund Site Wilmington, Massachusetts

						Lab	Lab	Final	Final		
SDG	Lab Sample ID	Analytical Method	Fraction	Field Sample ID	Parameter	Result	Qualifier	Result	Qualifier	Val Reason Code	Units
360-35898-1	360-35898-1	SW6010	D	OC-SW-ISCO1	Sodium	90000	В	90000	J	TD	ug/l
360-35898-1	360-35898-1	SW6010	Т	OC-SW-ISCO1	Sodium	73000		73000	J	TD	ug/l
360-35898-1	360-35898-2	SW6010	D	OC-SW-ISCO2	Sodium	190000	В	190000	J	TD	ug/l
360-35898-1	360-35898-2	SW6010	T	OC-SW-ISCO2	Sodium	150000		150000	J	TD	ug/l
360-35898-1	360-35898-3	SW6010	Т	OC-SW-ISCO3	Sodium	82000		82000	J	TD	ug/l
360-35898-1	360-35898-3	SW6010	D	OC-SW-ISCO3	Sodium	99000	В	99000	J	TD	ug/l
360-35898-1	360-35898-4	SW6010	Т	OC-SW-PZ-16RRSW	Sodium	160000		160000	J	TD	ug/l
360-35898-1	360-35898-4	SW6010	D	OC-SW-PZ-16RRSW	Sodium	200000	В	200000	J	TD	ug/l
360-35898-1	360-35898-5	SW6010	Т	OC-SW-PZ-17RRSW	Sodium	160000		160000	J	TD	ug/l
360-35898-1	360-35898-5	SW6010	D	OC-SW-PZ-17RRSW	Sodium	190000	В	190000	J	TD	ug/l
360-35898-1	360-35898-6	SW6010	Т	OC-SW-PZ-18RSW	Sodium	67000		67000	J	TD	ug/l
360-35898-1	360-35898-6	SW6010	D	OC-SW-PZ-18RSW	Sodium	89000	В	89000	J	TD	ug/l
360-35898-1	360-35898-7	SW6010	Т	OC-SW-SD-17	Sodium	96000		96000	J	TD	ug/l
360-35898-1	360-35898-7	SW6010	D	OC-SW-SD-17	Sodium	140000	В	140000	J	TD	ug/l

Units:

ug/L = microgram per liter

Validation Reason Codes:

TD = Dissolved concentration exceeds total

Validation Qualifier:

U = Not detected, value is the detection limit

J = Value is estimated

Prepared by / Date: KJC 09/22/11

Checked by / Date: WDC 09/26/11

Version 1.2, Nov 2002

OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

A. Carl Id
Reviewer/Date Mollellag 9/2/11
Sr. Review/Date Chris (Scaran 10/14/1)
Lab Report # 360-35898-1
Project # 6107110016.12

total and dissolut aluminum, chromium, sochium	
1.0 <u>Laboratory Deliverable Requirements</u>	
1.1 Laboratory Information : Was all of the following provided in the laboratory report. Check items received.	
☑ Name of Laboratory ☑ Address ☑ Project ID ☑ Phone # Client Information: ☑ Name ☑ Address ☑ Client	Sample identification Field and Laboratory nt Contact (IDs must be cross-referenced)
ACTION: If no, contact lab for submission of missing or illegible information.	
1.2 Laboratory Report Certification Statement	Yes [No [] N/A [] Comments:
Does the laboratory report include a completed Analytical Report Certification in the requ	uired format?
ACTION: If no, contact lab for submission of missing certification or certification with cor	rrect format.
1.3 Laboratory Case Narrative:	Yes No No NA Comments:
Marrative serves as an exception report for the project and method QA/QC on the	performance. ☐ Narrative includes an explanation of each discrepancy
	Certification Statement.
ACTION: If no, contact lab for submission of missing or illegible information.	
1.4 Chain of Custody (COC) copy present with all documentation completed	Yes No N/A Comments:
NOTE: Olin receives and maintains the original COC.	
ACTION : If no, contact lab for submission of copy of completed COC.	

1.5 Sample	Receipt Information (Cooler Receipt Form present?):	Yes [No [_]	. N/A []	Comments:
Were each of into the labor	of the following tasks completed and recorded upon receipt of the sample(s) ratory?	·			
Sample temperature	e confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered as sample condition observed phyterified (where applicable) if Field an	on the same	day as colle	ection, tempera	nture requirement does not apply).
Container type note	ed Sample condition observed DpH verified (where applicable) DField an	nd lab IDs cro	oss referenc	ed	
ACTION: If no, cont	act lab for submission of missing or incomplete documentation.				
1.5.1	Were all samples delivered to the laboratory without breakage?	Yes 💹	No [_]	N/A []	Comments:
1.5.2	Does the <i>Cooler Receipt Form</i> or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?				Comments:
1.6 Sample laborato	Results Section: Was each of the following requirements supplied in the rry report for each sample?	Yes [No []	N/A []	Comments:
☐ K Field ID and Lab ☐ Clean-up method ☐ Matrix	ID	Dilution Date of pats (soils mus	Factor preparation/ t be reporte	/extraction/diged in dry weigh	moisture or solids Reporting limits estion clean-up and analysis, where applicable it)
ACTION: If no, con	tact lab for submission of missing or incomplete information.				
1.7 QA/QC laboratory re	Information: Was each of the following information supplied in the port for each sample batch?	Yes []	No []	N/A []	Comments:

1		/						
☑ Met	hod blank	results LCS recove	eries MS/MSD recoveries and RPDs	Laboratory	duplicate res	sults (where	applicable)	
ACTIO	N: If no,	contact lab for submission	on of missing or incomplete information.					
٠								
2.0	Holdin	g Times	-			/	<i>,</i>	
Have a	ıny techni exceede water aı	d? Holding time for met	mined from date of collection to date of tals is 180 days from sample collection to	f analysis, been analysis for both	Yes []	No 🗾	N/A]	Comments:
NOTE	: List sam	ples that exceed hold time	e with # of days exceeded on checklist					
ACTIO			e exceeded, qualify all positive results (J) olding time) reject (R) all non-detect result					
3.0	Labora	atory Method						
	3.1	Was the correct labor	ratory method used?		Yes [No [_]	N/A [_]	Comments:
		Water Digestion Soil Digestion Metals	3005A or 3010A or 3020A 3050B 6010B or 200.7					
com	pared to		tory to provide justification for n. Contact senior chemist to inform C		,			
	3.2	Are the practical qui	 Appear in the same as those space of the same as those space. Appear □ Lab □ MADEP 	pecified by the	Yes 🗾	No []	N/A []	Comments:
NOT	TE: Verify	that the reported metals	match the target list specified on the COC)

					I
	If no, evaluate variation with respect to sample matrix, preparation, detc. If sample PQL is indeterminate, contact lab for explanation.	ilution,		×	
3.3	Are results present for each sample in the SDG?	Yes []	No []	N/A []	Comments:
ACTION: If r	o, check Request for Analysis to verify if method was ordered and COC to ver	rify that it was sent,			
3.4	If dilutions were required, were dilution factors reported?	Yes [🗸	No []	N/A []	Comments:
ACTION: If r	o, contact the lab for submission.				
4.0 <u>Met</u> l	nod Blanks				
4.1	Is the Method Blank Summary present?	Yes 🗾	No [_]	N/A []	Comments:
ACTION:	If no, call the laboratory for submission of missing data.				
4.2	Frequency of Analysis: Was a method blank analyzed for each dibatch of < 20 field samples?	igestion Yes [_/	√ No [_]	N/A []	Comments:
	If no, contact laboratory for justification. Consult senior chemist for trate non-compliance.	r action			
4.3	Is the method blank less than the PQLs for all target elements?	Ves Lav	/ _{Nof 1}	N/A []	Comments:
NOTE: Mi samples	ADEP requires the method blank to be matrix matched and digested t	with the		٠	
4.4 the fo	Do any method blanks have positive results for metals? Qualify data accordiowing:	ording to Yes [V 5004um (355 u	No []	N/A []	Comments:
6010.doc		ording to Yes [V Sodium (355 u letin und establi sodium ne who	hiad at f	ine fines the mesoth the	e blank conc un action b

Quality Control Results

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79397

Method: 6010B Preparation: N/A

Lab Sample ID:

MB 360-79397/2

Analysis Batch:

360-79397

Instrument ID:

Varian ICP

Client Matrix:

Water

Prep Batch:

N/A Lab File ID: N/A

090111b.csv

Dilution: Analysis Date:

1.0 09/01/2011 1211 Leach Batch:

Initial Weight/Volume:

1.0 mL

Prep Date:

N/A

Units:

ug/L

Final Weight/Volume:

1.0 mL

Leach Date:

N/A

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	355	J	280	2000

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 360-79397

Method: 6010B Preparation: N/A

LCS Lab Sample ID:

LCS 360-79397/1 Water

Analysis Batch:

360-79397

Instrument ID:

Varian ICP

Client Matrix:

Prep Batch:

N/A

Lab File ID:

Dilution:

1.0

Leach Batch:

N/A

Initial Weight/Volume:

090111b.csv

Analysis Date:

09/01/2011 1209

Units:

ug/L

Final Weight/Volume:

1.0 mL 10 mL

Prep Date: Leach Date: N/A N/A

LCSD Lab Sample ID:

LCSD 360-79397/8

Analysis Batch: Prep Batch:

360-79397 N/A

Instrument ID: Lab File ID:

Varian ICP

Dilution:

Client Matrix: Water

Analysis Date:

1.0 09/01/2011 1402 Leach Batch: Units:

99 98

94

N/A ug/L Initial Weight/Volume: Final Weight/Volume: 090111b.csv 1.0 mL 10 mL

LCS Qual

LCSD Qual

Prep Date: Leach Date:

Analyte

Aluminum

Chromium

Sodium

N/A

N/A

% Rec. LCS LCSD

103

101

97

RPD **RPD Limit** Limit 80 - 120 3 20 80 - 120 20 4 80 - 120 3 20

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					•
Prep Batch: 360-78938		***************************************			
_CS 360-78938/2-A	Lab Control Sample	Т	Water	3010A	
_CSD 360-78938/3-A	Lab Control Sample Duplicate	Т	Water	3010A	
MB 360-78938/1-A	Method Blank	Т	Water	3010A	
360-35898-1	OC-SW-ISCO1	Т	Water	3010A	
360-35898-2	OC-SW-ISCO2	Т	Water	3010A	
360-35898-3	OC-SW-ISCO3	Т	Water	3010A	
360-35898-4	OC-SW-PZ-16RRSW	T,	Water	3010A	
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	3010A	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	3010A	
360-35898-7	OC-SW-SD-17	Т	Water	3010A	
Analysis Batch:360-7904	9				
LCS 360-78938/2-A	Lab Control Sample	Т	Water	6010B	360-78938
LCSD 360-78938/3-A	Lab Control Sample Duplicate	Т	Water	6010B	360-78938
MB 360-78938/1-A	Method Blank	T	Water	6010B	360-78938
360-35898-1	OC-SW-ISCO1	Т	Water	6010B	360-78938
360-35898-2	OC-SW-ISCO2	Т	Water	6010B	360-78938
360-35898-3	OC-SW-ISCO3	T	Water	6010B	360-78938
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	6010B	360-78938
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	6010B	360-78938
360-35898-6	OC-SW-PZ-18RSW	Т	Water	6010B	360-78938
360-35898-7	OC-SW-SD-17	Т	Water	6010B	360-78938
Analysis Batch:360-7939					
LCS 360-79397/1	Lab Control Sample	Т	Water	6010B	
LCSD 360-79397/8	Lab Control Sample Duplicate	Т	Water	6010B	
MB 360-79397/2	Method Blank	Т	Water	6010B	•
360-35898-1	OC-SW-ISCO1	D	Water	6010B	
360-35898-1DU	Duplicate	D	Water	6010B	
360-35898~1MS	Matrix Spike	D	Water	6010B	
360-35898-2	OC-SW-ISCO2	D	Water	6010B	
360-35898-3	/ oc-sw-isco3 \	/ D \	Water	6010B	
360-35898-4	/ OC-SW-PZ-16RRSW)	D	Water	6010B	
360-35898-5	OC-SW-PZ-17RRSW	(D /	Water	6010B	
360-35898 - 6	OC-SW-PZ-18RSW	\ D /	Water	6010B	
360-35898-7	OC-SW-SD-17	D	Water	6010B	
					,

Report Basis

D = Dissolved

T = Total

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the	
PQL or the concentration reported if greater than the PQL.	

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

ACTION: For any blank with positive results, list all contaminants for each method blank including the concentration detected and the flagging level (flagging level = 5x the blank value) and the associated samples and qualifiers.

5.0	<u>Labo</u>	ratory Control Standard				
	5.1	Was a laboratory control standard run with each analytical batch of 20 samples or less?	Yes [_/]	No []	N/A [_]	Comments:
ACT	ION:	Ill target, second source LCS is required by MADEP. Call laboratory for LCS form submittal. If data are not available, use judgement to evaluate data accuracy associated with that batch.	,			
	5.2	Is a LCS Summary Form present?	Yes [1/]	No []	N/A []	Comments:
ACT	ION:	If no, contact lab for resubmission of missing data.			/	
	5.3	Is the recovery of any analyte outside of MADEP control limits? MADEP	Yes []	No [1/2]	N/A []	Comments:
	Samp	le Type % Rec				
	Water					
	Soil	within Lab generated limits				
ACT	ION:	If recovery is above the upper limit, qualify all positive sample results				
withi	n the l	patch as (J). If recovery is below the lower limit, qualify all positive and				
		results within the batch as (J). If LCS recovery is <30%, positive and non-				

Comments:

detect results are rejected (R).

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

Were project-specific MS/MSDs collected? List project samples that were spiked.

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present?

NOTE: A full target, second source MS/MSD is required by MADEP.

ACTION: If any matrix spike data are missing, call lab for resubmission.

6.3 Were matrix spikes analyzed as indicated on the COC and project schedule?

ACTION: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

6.4 Are any metal spike recoveries outside of the QC limits?

	MADEP	QAPP	
Sample Type	% Rec	% Rec	Method
Water	75-125	N/A	6010B
Water	N/A	70-130	200.7
Soil	<i>75-125</i>	75-125	6010B

NOTE:
$$%R = (SSR-SR) \times 100\%$$
 Where: $SSR = Spiked sample result SA = Spike added SA = Spike added$

NOTE: If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

Yes 🔽	No [N/A [Comments:	OC-SW-I5001
Yes [No N/A	Comments:	
Yes 🗾	No [] N/A []	Comments:	·
Yes []	No N/A	Comments:	

NOTE: If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.				•
ACTION: MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J).				/
6.5 Are any RPDs for MS/MSD recoveries outside of the QC limits?	Yes []	No []	N/A	Comments:
NOTE : RPD = S-D x 100% Where: $S = MS$ sample result $D = MSD$ sample result				
NOTE: If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied.				
ACTION: If the RPD exceeds the control limit, qualify positive results and non-detects (J).				
7.0 <u>Laboratory Duplicate</u>		/		
7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Duplicate Sample Form present?	Yes []	No []	N/A []	Comments:
NOTE: MADEP refers to this sample as a "matrix duplicate".				
ACTION: If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.			/	
7.2 Is the RPD between the result for the laboratory duplicate sample and the result for the parent sample outside of the QA/QC limits?	Yes []	No 🗾	/ N/A []	Comments:

MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD
For aqueous results > $5 \times RL$, RPD must be $\pm 20\%$	20
For aqueous results < 5× RL, RPD must be ≤ RL	20
For soil/sediment results > $5 \times$ RL, RPD must be $\pm 35\%$	20
For soil/sediment results < $5 \times$ RL, RPD must be $\leq 2 \times$ RL	20

ACTION: If the RPD exceeds the limits, qualify both positive results and non-detects as estimated and flag them J. Narrate non-compliance

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

- **8.1** Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist.
- **8.2** Do any rinsate blanks have positive results?

NOTE: MADEP does not require the collection of rinsate blanks.

ACTION: Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates.

Yes No N/A C

9.2 Were field duplicates collected per the required frequency?	Yes No No Comments:
SOW □ QAPP (1 per 10) □ MADEP Option 1 (1 per 20) □ MADEP Option 3 (1 per 10) □	
9.3 Was the RPD \leq 50% for soils or waters? Calculate the RPD for all results and attach to this review.	Yes [_] No [_] N/A [_] Comments:
ACTION : RPD must be ≤50% for soil and water. Qualify data (J) for both sample results it	f the RPD exceeds 50%.
10.0 Special QA/QC	
 10.1 Were both total and dissolved metals analysis performed? If so, the dissolved metal concentration should not exceed that of the total metal. ACTION: If results for both total and dissolved are ≥ 5x the PQL and the dissolved concentration is 10% higher than the total, flag both results as estimated (J). If total and dissolved concentrations are less than 5x the PQL and the difference exceeds 2x the PQL, flag both results as estimated (J) 	Yes No No NA Comments: Dissolved Han 102 high than the total sodium results results. Total and dissolved sodium results were qualified estimated (5).

10.0	Application of Validation Qualifiers				
	Was any of the data qualified?	Yes	No []	N/A []	Comments:
lf so, ap	pply data qualifiers directly to the DQE copy of laboratory report and flag pages for entr	y in database.			

REFERENCES

- LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999
- U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (QA/QC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

Job Number: 360-35898-1

Client Sample ID:

Client: Olin Corporation

OC-SW-ISCO1

Lab Sample ID:

360-35898-1

Client Matrix:

Water

Date Sampled: 08/23/2011 1025

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Batch:

Prep Batch:

Analysis Method: Prep Method:

3010A

6010B

360-79049 360-78938

Instrument ID: Lab File ID:

Varian ICP 082611a.csv

Dilution: 1.0

Analysis Date: Prep Date:

08/26/2011 1221

08/25/2011 0735

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	~	RL
Aluminum	150		13		100
Chromium	16		0.65		5.0
Sodium	73000		280		2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B N/A

Analysis Batch:

360-79397

Instrument ID:

Meach Ch

Varian ICP

Dilution:

1.0

Analysis Date:

Prep Date:

N/A

09/01/2011 1347

N/A

Lab File ID:

090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

Analyte Result (ug/L) Qualifier MDL RL Aluminum 40 13 100 Chromium 8.6 0.65 5.0 90000 "\5 Sodium 280 2000

Page 13 of 49

Job Number: 360-35898-1

Client Sample ID:

Client: Olin Corporation

OC-SW-ISCO2

Lab Sample ID:

360-35898-2

Client Matrix:

Water

Date Sampled: 08/23/2011 0915

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:

Prep Method:

6010B 3010A

Dilution:

1.0

Analysis Date: Prep Date:

08/26/2011 1223

08/25/2011 0737

Analysis Batch: Prep Batch:

360-79049

360-78938

Instrument ID:

Lab File ID:

Varian ICP 082611a.csv

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	230		13	100
Chromium	51		0.65	5.0
Sodium	150000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution:

1.0

Analysis Date:

N/A

Prep Date:

09/01/2011 1359

Analysis Batch:

360-79397

N/A

Instrument ID:

Varian ICP Lab File ID: 090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

Analyte Result (ug/L) Qualifier MDL RL 36 13 100 Aluminum Chromium 13 0.65 5.0 190000 づ Sodium 280 2000

Marlle.

Job Number: 360-35898-1

Client Sample ID:

Client: Olin Corporation

OC-SW-ISCO3

Lab Sample ID:

360-35898-3

Client Matrix:

Water

Date Sampled: 08/23/2011 0900

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: Prep Method:

6010B 3010A

Analysis Date: Prep Date:

Dilution:

1.0

08/26/2011 1232

08/25/2011 0737

Analysis Batch: Prep Batch:

360-79049 360-78938

Instrument ID: Lab File ID:

Varian ICP 082611a.csv

Initial Weight/Volume:

50 mL

Final Weight/Volume: 50 mL

MDL RL Qualifier Analyte Result (ug/L) 100 Aluminum 53 13 Chromium 1.2 0.65 5.0 Sodium 82000 280 2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution: 1.0

Analysis Date:

09/01/2011 1408

Prep Date:

N/A

Analysis Batch: 360-79397

N/A

instrument ID:

Lab File ID:

Varian ICP 090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

Qualifier Analyte Result (ug/L) MDL RĹ ND 13 100 Aluminum 5.0 Chromium ND 0.65 99000 📆 2000 Sodium 280

Noppellel: 9/21/4

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID:

OC-SW-PZ-16RRSW

Lab Sample ID:

360-35898-4

Client Matrix:

Water

Date Sampled: 08/23/2011 0925

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: Prep Method:

6010B 3010A

1.0

Analysis Date: Prep Date:

Dilution:

08/26/2011 1235

08/25/2011 0737

Analysis Batch: Prep Batch:

360-79049 360-78938

Instrument ID: Lab File ID:

Varian ICP 082611a.csv

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1900		13	100
Chromium	560		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution:

1.0 Analysis Date:

Prep Date:

09/01/2011 1411

N/A

Analysis Batch:

360-79397 N/A

Instrument ID:

Mellel 9/4/4

Lab File ID:

Varian ICP 090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

Analyte Result (ug/L) Qualifier MDL RL 1500 13 100 Aluminum Chromium 490 0.65 5.0 200000 5 2000 Sodium 280

Page 16 of 49

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID:

OC-SW-PZ-17RRSW

Lab Sample ID:

360-35898-5

Client Matrix:

Water

Date Sampled: 08/23/2011 0940

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: Prep Method:

6010B 3010A

1.0

Analysis Date: Prep Date:

Dilution:

08/26/2011 1238 08/25/2011 0737

Analysis Batch: Prep Batch:

360-79049

360-78938

Instrument ID:

Lab File ID:

Varian ICP 082611a.csv

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	5700		13	100
Chromium	1300		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution: 1.0

Analysis Date:

Prep Date:

09/01/2011 1414 N/A

Analysis Batch:

360-79397

N/A

Instrument ID:

Lab File ID:

Varian ICP 090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

Analyte Result (ug/L) Qualifier MDL RL Aluminum 1400 13 100 Chromium 600 0.65 5.0 Sodium 190000 \ 280 2000

Melle 1/4,

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID:

OC-SW-PZ-18RSW

Lab Sample ID:

360-35898-6

Client Matrix:

Water

Date Sampled: 08/23/2011 1010

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: Prep Method:

6010B 3010A

1.0

Analysis Date: Prep Date:

Dilution:

08/26/2011 1241 08/25/2011 0737 Analysis Batch: Prep Batch:

360-79049

360-78938

Instrument ID: Lab File ID:

Varian ICP 082611a.csv

initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	140		13 ·	100
Chromium	15		0.65	5.0
Sodium	67000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution: 1.0

Analysis Date: Prep Date:

09/01/2011 1418

N/A

Analysis Batch:

360-79397 N/A

Instrument ID:

Varian ICP Lab File ID:

090111b.csv 1.0 mL

Initial Weight/Volume: Final Weight/Volume:

1.0 mL

Analyte Result (ug/L) Qualifier MDL RL Aluminum 36 100 13 Chromium 8.2 0.65 5.0 Sodium 89000 7 280 2000

1/2/11

Job Number: 360-35898-1 Client: Olin Corporation

Client Sample ID:

OC-SW-SD-17

Lab Sample ID:

360-35898-7

Client Matrix:

Water

Date Sampled: 08/23/2011 0950

Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: Prep Method:

6010B 3010A

1.0

Analysis Date: Prep Date:

Dilution:

08/26/2011 1244

08/25/2011 0737

Analysis Batch: Prep Batch:

360-79049 360-78938

Instrument ID: Lab File ID:

Varian ICP 082611a.csv

Initial Weight/Volume:

50 mL

Final Weight/Volume:

50 mL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1200	······································	13	100
Chromium	280		0.65	5.0
Sodium	96000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:

6010B

N/A

Dilution:

1.0

Analysis Date: Prep Date:

09/01/2011 1421

N/A

Analysis Batch: 360-79397

N/A

Instrument ID:

Varian ICP Lab File ID: 090111b.csv

Initial Weight/Volume:

1.0 mL

Final Weight/Volume:

1.0 mL

RL MDL Anaiyte Result (ug/L) Qualifier 920 13 100 Aluminum 0.65 5.0 280 Chromium 140000 5 280 2000 Sodium

1/MMbll

Version 1.2, Nov 2002

OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST ICP METALS BY METHOD 6010B/200.7

Reviewer/Date	Mhullble 9	/21	[li	.
Sr. Review/Date	Chris (Zicardi	ÍÓ	1141	W)
Lab Report #	360-35962-1			
Project #	6107110016-12	_ ′	,	

dissolved aluminum, chromium	
1.0 Laboratawa Daliwayahla Paguiramanta	
1.0 <u>Laboratory Deliverable Requirements</u>	
1.1 Laboratory Information: Was all of the following provided in the laboratory report Check items received. Name of Laboratory Address Project to Phone # Client Information: Name Address Client of	
ACTION: If no, contact lab for submission of missing or illegible information.	
1.2 Laboratory Report Certification Statement	Yes [No [] N/A [] Comments:
Does the laboratory report include a completed Analytical Report Certification in the require	ed format?
ACTION: If no, contact lab for submission of missing certification or certification with corre	ect format.
1.3 Laboratory Case Narrative:	Yes [/] No [] N/A [] Comments:
Narrative serves as an exception report for the project and method QA/QC per on the	erformance.
	Certification Statement.
ACTION: If no, contact lab for submission of missing or illegible information.	
1.4 Chain of Custody (COC) copy present with all documentation completed	Yes No No N/A Comments:
NOTE: Olin receives and maintains the original COC.	
ACTION : If no contact lab for submission of conv of completed COC.	

1.5	Sample I	Receipt	Infor	nation	(Coo	ler Re	ceipt F	orm p	oresen	ıt?):			Yes 🗾	/ _N	√о []	N/A [_]	Comm	ents:			
	e each of the labora		llowin	g tasks	compl	leted a	nd reco	rded uj	pon rec	eipt of	the sam	nple(s)	•									
☑ Sample ten ☑ Container	nperature	confirn	ned: m	ust be	°-10)° C. (I1	f sample	s were	sent by	y courier	r and de	elivered	on the san	ne da	y as colle	ection, te	empera	ature req	uirement	does not	apply).	
Container t	type noted	l □ saı	nple c	onditio	ı obsei	rved D	pH ve	rified ((where	applicat	ole) 🏻	Field an	d lab IDs	cross	referenc	ed						
ACTION: If	no, conta	ct lab f	or sub	nission	of mis	ssing o	r incomj	olete de	ocumen	ntation.				/								
	1.5.1	Were	all san	iples de	elivere	d to the	e laborat	tory wi	thout b	reakage ^r	?		Yes [1	Vo []	N/A [_]	Comm	ents:			
	1.5.2	Does with s	the C ample nstanc	ooler F receipt es affec	Receipt , condi ting th	t Form ition of e quali	or Lab f the sam ty of the	Narra pples, a data?	tive inc	licate ot al proble	ther pro ems or s	oblems special	Yes [1		/ N/A [_]	Comm	ents:			
	Sample laborator					ch of t	the follo	wing r	equiren	nents sı	upplied	in the	Yes [/	1	Vo []	N/A [Comm	ents:			
☑ ÆField ID ☑ Clean-up ☑ Matrix	and Lab method	ID	Z Z Z Ta	, Øate a Analys get ana	<i>nd tim</i> is meth lytes a	e colle hod and con	cted ncentratio	ons	Ana ZIPr	ılyst Init reparatio	tials on meth	nod □ Uni	回 / Diluti 回 Date of its (soils m	on Fa of pre nust b	actor paration, e reporte	ł /extractio ed in dry	% 1 on/dige	moisture estion cle at)	or solid ean-up a	s nd analy	Represis, when	∕ orting limi ∍ applicab
ACTION: I																						
1.7 labo	QA/QC oratory rep	Informort for	nation each s	: Was ample b	each atch?	of th	e follov	wing i	nforma	tion sur	pplied	in the	Yes [1	No []	N/A [Comm	ents:			

I Meth	od blank	results CS recover	ries MS/MSD recoveries and RPDs	☐ Laboratory	duplicate res	sults (where	applicable)	
ACTIO	N: If no,	contact lab for submission	n of missing or incomplete information.					
2.0	Holding	<u>g Times</u>				,	,	
Have an	y technic exceeded water an	d? Holding time for meta	nined from date of collection to date or alls is 180 days from sample collection to a	f analysis, been analysis for both	Yes []	No [_]	N/A]	Comments:
NOTE:	List samp	oles that exceed hold time	with # of days exceeded on checklist					
ACTIO.			exceeded, qualify all positive results (J) ding time) reject (R) all non-detect results					
3.0	Labora	ntory Method	~		/	į.		
	3.1	Was the correct labora	ntory method used?		Yes 🗾	No []	N/A []	Comments:
		Water Digestion Soil Digestion Metals	3005A or 3010A or 3020A 3050B 6010B or 200.7					
comp	ared to	the requested method. t variance.	ory to provide justification for m Contact senior chemist to inform Cl	lient of change		/		
	3.2	Are the practical quan	ntitation limits the same as those sp .PP □ Lab □ MADEP	pecified by the	Yes 🗾	No []	N/A []	Comments:
NOT	E: Verify	that the reported metals n	natch the target list specified on the COC.	,				
6010 da	oc.							

		If no, evaluate variation with respect to sample matrix, preparation, dilution, c. If sample PQL is indeterminate, contact lab for explanation.	/				
	3.3	Are results present for each sample in the SDG?	Yes [No []	N/A []	Comments:	
ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing da							
	3.4	If dilutions were required, were dilution factors reported?	Yes [No [_]	N/A []	Comments:	
ACTION: If no, contact the lab for submission.							
4.0	Meth	od Blanks		/			
	4.1	Is the Method Blank Summary present?	Yes 🗾	No []	N/A []	Comments:	
AC	TION:	If no, call the laboratory for submission of missing data.		,			
	4.2	Frequency of Analysis: Was a method blank analyzed for each digestion batch of < 20 field samples?	Yes [_	/ No []	N/A []	Comments:	
		If no, contact laboratory for justification. Consult senior chemist for action rrate non-compliance.					
	4.3	Is the method blank less than the PQLs for all target elements?	Yes [2]	No[]	N/A []	Comments:	
	TE: M/ nples	NDEP requires the method blank to be matrix matched and digested with the		,	,		
	4.4 the fo	Do any method blanks have positive results for metals? Qualify data according to llowing:	Yes [_]	No [_/	N/A []	Comments:	
				•			

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the
PQL or the concentration reported if greater than the PQL.
·

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

ACTION: For any blank with positive results, list all contaminants for each method blank including the concentration detected and the flagging level (flagging level = 5x the blank value) and the associated samples and qualifiers.

5x the blank value) and the associated samples and qualifiers. Laboratory Control Standard	,					
5.1 Was a laboratory control standard run with each analytical batch of 20 samples or less?	Yes No No N/A Comments:					
NOTE: A <u>full</u> target, second source LCS is required by MADEP. ACTION: Call laboratory for LCS form submittal. If data are not available, use professional judgement to evaluate data accuracy associated with that batch.						
5.2 Is a LCS Summary Form present?	Yes No N/A Comments:					
Sample Type Sample Type 80-120 Soil Within Lab generated limits ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and non-detects results within the batch as (J). If LCS recovery is <30%, positive and non-detect results are rejected (R).	Yes No N/A Comments:					

Comments:

No [] N/A [] Comments: OC-Gω-202S

Comments:

Yes [No] N/A []

Yes [No [] N/A []

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

Were project-specific MS/MSDs collected? List project samples that were spiked.

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present?

NOTE: A full target, second source MS/MSD is required by MADEP.

ACTION: If any matrix spike data are missing, call lab for resubmission.

6.3 Were matrix spikes analyzed as indicated on the COC and project schedule?

ACTION: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

6.4 Are any metal spike recoveries outside of the QC limits?

	MADEP	QAPP	
Sample Type	% Rec	% Rec	Method
Water	75-125	N/A	6010B
Water	N/A	70-130	200.7
Soil	75-125	75-125	6010B

NOTE:
$$%R = (SSR-SR) \times 100\%$$

Where: SSR = Spiked sample result SR = Sample result

SA = Spike added

NOTE: If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

NOTE: If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.				
ACTION: MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J).				
6.5 Are any RPDs for MS/MSD recoveries outside of the QC limits?	Yes []	No []	N/A [Comments:
NOTE : RPD = S-D x 100% Where: S = MS sample result $(S+D)/2$ $D = MSD$ sample result				
NOTE: If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied.				
ACTION: If the RPD exceeds the control limit, qualify positive results and non-detects (J).		·		
0 <u>Laboratory Duplicate</u>		/		
7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Duplicate Sample Form present?	Yes [No []	N/A []	Comments:
NOTE: MADEP refers to this sample as a "matrix duplicate".				
ACTION: If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.	,			
7.2 Is the RPD between the result for the laboratory duplicate sample and the result for the parent sample outside of the QA/QC limits?	Yes []	No 🔝	N/A []	Comments:
010 doc				

6010.doc

MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD
For aqueous results > $5 \times RL$, RPD must be $\pm 20\%$	20
For aqueous results < 5× RL, RPD must be ≤ RL	20
For soil/sediment results > $5 \times$ RL, RPD must be $\pm 35\%$	20
For soil/sediment results $< 5 \times$ RL, RPD must be $\leq 2 \times$ RL	20
·	20

ACTION: If the RPD exceeds the limits, qualify both positive results and non-detects as estimated and flag them J. Narrate non-compliance

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

- **8.1** Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist.
- **8.2** Do any rinsate blanks have positive results?

NOTE: MADEP does not require the collection of rinsate blanks.

ACTION: Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is $> 5 \times$ blank value, no qualification is needed.

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates.

Yes __ No __ N/A __

Comment

6010.doc

9.2 Were field duplicates collected per the required frequency?	Yes []	No [_]	N/A	Comments:
SOW □ QAPP (1 per 10) □ MADEP Option 1 (1 per 20) □ MADEP Option 3 (1 per 10) □			/	
9.3 Was the RPD \leq 50% for soils or waters? Calculate the RPD for all results and attach to this review.	Yes []	No [_]	N/A	Comments:
ACTION : RPD must be ≤50% for soil and water. Qualify data (J) for both sample results if	the RPD e	exceeds 509	%.	
10.0 Special QA/QC			,	
10.1 Were both total and dissolved metals analysis performed? If so, the dissolved metal concentration should not exceed that of the total metal.	Yes [_]	No [N/A [_]	Comments:
ACTION: If results for both total and dissolved are $\geq 5x$ the PQL and the dissolved concentration is 10% higher than the total, flag both results as estimated (J). If total and dissolved concentrations are less than $5x$ the PQL and the difference exceeds $2x$ the		,		

10.0	Application	of Validation	Qualifiers
10.0	Application	oi vanuauon	Qualifier

Was any of the data qualified?

	. ,		
Yes []	No L	N/A []	Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.

REFERENCES

- LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999
- U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (QA/QC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.
- MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

Version 3, October 2008

OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST WET CHEMISTRY PARAMETERS BY VARIOUS METHODS

0.1.161	- 1. I.
Reviewer/Date / Manual /	ا//٤// د
Sr. Review/Date Chn3 (Cicardo	10/14/11
Lab Report # 360 - 35898-1	<u> </u>
Project # 6107 110016.12	

specific conductance chloride, nitrate, nitrite, solfate, ammonia.

1.5 Sample Receipt Information (Cooler Receipt Form): Were each of the following

tasks completed and recorded upon receipt of the sample(s) into the laboratory?

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for Sampling, Data Evaluation and Reporting Activities." MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

	not define criteria, QA/QC requirements will default to limits employed by the laboratory.	
1.0	Laboratory Deliverable Requirements	
	1.1 Laboratory Information : Was all of the following provided in the laboratory report? Check items received.	/
	☑ Name of Laboratory ☑ Address ☑ Project ID ☑ Phone # Client Information: ☑ Name ☑ Address ☑ Client Contact	Sample identification – Field and Laboratory
	Client Information: Name Address Client Contact	(IDs must be cross-referenced)
ACTIO	ON: If no, contact lab for submission of missing or illegible information.	
	1.2 Laboratory Report Certification Statement	Yes [/] No [] N/A [] Comments:
	Does the laboratory report include a completed Analytical Report Certification in the	required format?
ACTIO	N: If no, contact lab for submission of missing certification or certification with correct t	
	1.3 Laboratory Case Narrative:	Yes [No [] N/A [] Comments:
	Narrative serves as an exception report for the project and method QA/QC performance	 □ Narrative includes an explanation of each discrepancy on the Certification Statement.
ACTIO	PN : If no, contact lab for submission of missing or illegible information.	
	1.4 Chain of Custody (COC) copy present with all documentation completed?	Yes No N/A Comments:
	Does the laboratory report include copies of Chain of Custody forms containing all samples in	n this SDG?
	NOTE: Olin receives and maintains the original COC.	
ACTIC	ON : If no, contact lab for submission of copy of missing completed COC.	

Page 1 of 9

	Yes [No []	N/A []	Comments:
Sample temperature confirmed: must be $1^{\circ}-10^{\circ}$ C. (If samples were sent by courier and delivered)	ed on the same d	lay as collect	ion, temperatu	re requirement does not apply).
☐ Container type noted ☐ Condition observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicable) ☐ Field and lateral conditions observed ☐ pH verified (where applicabl	b IDs cross refe	renced		
ACTION: If no, contact lab for submission of missing or incomplete documentation. 1.5.1 Were the correct bottles and preservatives used? Ammonia,—1 Liter polyethylene/H ₂ SO ₄ to pH<2,cool to 4°C	Yes	No [_]	N/A [_]	Comments:
Oil & Grease – 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C		•		
Alkalinity – 1 Liter polyethylene/cool to 4°C				
Chemical Oxygen Demand – 50 mL polyethylene/H ₂ SO ₄ to pH<2,cool to 4°C				
Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C				
Nitrate/nitrite - H2SO4 to pH<2,cool to 4°C				-
Organic Carbon – 500 mL amber glass bottle/HCl or H ₂ SO ₄ to pH<2,cool to 4°C				
Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C		,		
Phenolics - H ₂ SO ₄ to pH<2,cool to 4°C				
✓ Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C				
ACTION: If no, inform senior chemist. Document justification for change container/volume (if applicable), qualify positive and non-detect data (J) data if cool temperature exceeds 10°C. Rejection of data requires professional judgment				
1.5.2 Were all samples delivered to the laboratory without breakage?	Yes 🗾	No [_]	N/A []	Comments:
1.5.3 Does the Cooler Receipt Form or Lab Narrative indicate other problems wis sample receipt, condition of the samples, analytical problems or specific circumstances affecting the quality of the data?		No 🗾	N/A []	Comments:

	1.6 Sample Resureport for each		ollowing information supplied in the		N/A	Comments:	
☑ AField □ Clean	l ID and Lab ID n-up method	Date and time co	ollected	☐ Dilution Factor☐ Date of preparation/ext	raction/digestion clea	oisture or solids n-up and analysis, wl	Reporting limit
Matri	x	Target analytes and		☐ Units (soils must be rep			
ACTIO	N: If no, contact la	b for submission of missi	ing or incomplete information.			•	
	for each sample ba	ten?	ng information provided in the laborat			Comments:	
				,	11		
ACTION	N: If no, contact lal	b for submission of missi	ng or incomplete information.		•	·	
2.0	<u>Holding Times</u>			Yes [_] No	N/A _]	Comments:	
	$\sqrt{28}$ days = an $\sqrt{\text{Alkalinity}}$ =	nmonia, chemical oxyger	ned from date of collection to date of n demand, chloride, organic carbon, o Sulfide, TDS, TSS = 7 days Nitrate + Nitrite as N = 28 days		tance, total organic c		hrs
	Nitrite nitrog	gen as $N = 48 \text{ hrs}$	Nitrate + Nitrite as $N = 28$ days				•
	NOTE: List sample	les that exceed hold time	with # of days exceeded on checklist				
	N: If technical ho t used to qualify so		I qualify results (J). For water sample	,			t results. Professional
	3.0 Laborator	ry Method		Yes [1] No	N/A	Comments:	
	3.1 Was the correc	t laboratory method used	?		e e		

Page 3 of 9

ACTION: If no, contact lab to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change or to request variance.

WET CHEM.doc

	2.2 And the practical quantitation	limits the same as those specifi	ied by the Yes No No N/A	Comments: Due to chloricle
	3.2 Are the practical quantitation ☐ QAPP/IRSWP ☐ Lab?	limits the same as those specifi	conelution, samples oc-s	w-Iscot, - Isco 2, -Isco 3, -Pi
	Note: The MADEP QA/QC Guidelines therefore all criteria will default to values define criteria, QA/QC requirements definay also apply.	do not yet list PQLs for wet chemist stipulated in the QAPP*. Where the QA	ry analyses, 16 RR Sw, - 17 RRSw, and PP does not fold diluter. Nitrate repartments accordingly.	Comments: Otte to order of switz limits were elevated
	Ammonia* = 0.1 mg/ L Nitrate Nitrogen as N* = .05 mg/L	Alkalinity** $\square = 1 \text{ mg/L}$	Bicarbonate Alkalinity** $\Box = 1 \text{ mg/L}$	Carbonate Alkalinity** $\Box = 1 \text{ mg/L}$
	Nitrate Nitrogen as N* 🗗 = .05 mg/L	Nitrite Nitrogen as N* 🗶 = .01 mg	$\frac{1}{L}$ Chloride* $\square = 1 \text{ mg/L}$	Hardness $*\Box = 2 \text{ mg/L}$
	Spec. Cond.** 2 3 umhos/cm	Total Organic Carbon** □ = 1 mg	g/L Oil & Grease* \Box = 5.5 mg/L	Sulfate (EPA 300.0)* $\square = 2 \text{ mg/L}$
	COD:* Low – 20 mg/L	COD* High - 50 mg/L □	$TDS* \square = 10 \text{ mg/L}$	$TSS* \Box = 5 \text{ mg/L}$
	pH* □ <2 to > 12	Phenolic - 0.01 mg/L		
	Other parameter(list)	PQL =	☐ Source of PQL =	
	Other parameter(list)	PQL =	☐ Source of PQL =	·
	3.3 Are the appropriate parameter results	present for each sample in the SDG?	verify that it was sent, and contact lab for resubmiss	Comments:
	3.4 If dilutions were required, were dilution	on factors reported?	Yes No No N/A	Comments:
ACTI(ON: If no, contact the lab for submission.			
1.0	Method Blanks		Yes No No N/A	Comments:
	4.1 Are the Method Blank Summaries pr		,	
ACTIO	ON: If no, call the laboratory for submission			
•	4.2 Was a method blank analyzed for each 20 or less?	ach analysis batch of wet chemistry field	d samples of Yes [\(\sum_{\text{No}} \) No [\(\text{N/A} \) N/A [\(\text{N/A} \)	Comments:

Page 4 of 9

ACTIC	ON: If no,	document discrepancy in case narrative and contact lab for justification. Consult seni	or chemist fo	or action nee	ded.	
	4.3 Is th	e method blank less than the PQL? (See Section 3.2 for PQLs).	Yes [No [_]	N/A []	Comments:
		any method blanks have positive results for wet chemistry parameters? Qualify data ag to the following:	Yes [_]	No [2	, N/A [_]	Comments:
		mple concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the the concentration reported if greater than the PQL.				
	If the sa	mple concentration is $> 5 \times$ blank value, no qualification is needed.				
ACTIO		y blank has positive results, list all the concentrations detected and flagging level (fla	gging level =	= 5 × blank v	value) on the c	checklist. List all affected samples and their
5.0	Labora	tory Control Standards				
	5.1	Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less?	Yes 🔝	No []	N/A []	Comments:
		, call laboratory for LCS form submittal. If data is not available, use professional mine qualification actions for data associated with the batch.				· .
	5.2	Is a LCS Summary Form present?	Yes [V]	No []	N/A []	Comments:
ACTIC	N: If no,	contact lab for resubmission of missing data.				
	5.3	Is any wet chemistry analyte LCS recovery outside the control limits?	Yes [_]	No []	N/A []	Comments:

Page 5 of 9

WET CHEM.doc

	LCS L	<u>imits:</u>		·	
	Total Or	$y^{**} \square = 80-120\%$ ganic Carbon** $\square = 80-120\%$ ow* $\square = 80-120\%$ s* $\square = 80-120\%$	Bicarbonate Alkalinity** $\square = 80-120\%$ TDS** $\square = 80-120\%$ COD High* $\square = 80-120\%$ Chloride* $\square = 80-120\%$	Carbonate Alkalinity** $\square = 80\text{-}120\%$ Oil & Grease* $\square = 80\text{-}120\%$ Nitrate Nitrogen as N** $\square = 80\text{-}120\%$ Sulfate (EPA 300.0)* $\square = 80\text{-}120\%$	Specific Conductivity * $\square = 80-120\%$ Ammonia Nitrogen as N* $\square = 80-120\%$ Nitrite Nitrogen as N** $\square = 80-120\%$ pH* $\square = 98-102\%$ TSS* NA
	Other pa	nrameter(list)	%R =	☐ Rec Limits=	
	Other pa	nrameter(list)	%R =	☐ Rec Limits =	·
	_		(MADEP has not yet defined LCS reco		
6.0 Matri	<u>Matrix</u> x spikes n	nay be collected at different	frequencies based on monthly, quarterly	, or task	
specif	ic schedu	les. Confirm spike requirem	nents for each set with the senior chemis	t.	
		-	Os analyzed? List project samples that were s	spiked. Yes [No [] N/A []	Comments: OC-SW-ISCOL - chloride, OC-SW-SD-17 ammonia MS/MID
ACTI		contact senior chemist to see if Is the MS/MSD Recovery For		sulfate, nitrate, nitrite, us/msD.	OC-SW-SD-17 ammonia MS/MID
ACTI	6.2 ON: If no	, contact lab for resubmission of		Yes 🔼 No [_] N/A [_]	Comments:
ACTI	6.3		1 at the required frequency of 1 per 20 san	Yes [/] No [] N/A []	•
ACTI	ON: If any	y matrix spike data is missing, c		/	
	6.4	Are any wet chemistry analyte	e spike recoveries outside of the QC limits?	yes [No No N/A] per cent recoveries 11	Comments: Amnonia us/usD 45/152). Unspiked am nonid han 4x spike. No action.

Page 6 of 9

Quality Control Results

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79479

Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID:

MB 360-79479/1-A

Client Matrix:

Water

Analysis Batch:

360-79587 360-79479 Instrument ID:

Lachat

Dilution:

1.0

Prep Batch: Leach Batch:

N/A

Lab File ID: Initial Weight/Volume: N/A

Analysis Date:

09/06/2011 1509

Units:

mg/L

50 mL

Prep Date: Leach Date: 09/02/2011 1415

N/A

Final Weight/Volume:

50 mL

Analyte

Result

Qual

RΙ

RL

Ammonia

ND

0.10

0.10

Lab Control Sample - Batch: 360-79479

Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID:

LCS 360-79479/2-A

Analysis Batch:

360-79587

Instrument ID:

Lachat N/A

Client Matrix: Dilution:

Water 1.0

N/A

Prep Batch: Leach Batch:

Units:

360-79479 N/A

mg/L

Lab File ID: Initial Weight/Volume: Final Weight/Volume:

50 mL 50 mL

Analysis Date: Prep Date:

09/06/2011 1510 09/02/2011 1415

Leach Date:

Spike Amount

Result % Rec. Limit

Qual

Analyte Ammonia

10.0

9.33

93

90 - 110

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 360-79479

Method: L107-06-1B

Preparation: Distill/Ammonia

MS Lab Sample ID:

360-35898-7

Analysis Batch:

360-79587

Instrument ID:

Lachat

Client Matrix:

Water

Prep Batch:

Dilution:

5.0

360-79479

Lab File ID:

N/A

Analysis Date:

09/06/2011 1512

Leach Batch:

N/A

50 mL

Prep Date:

09/02/2011 1415

Initial Weight/Volume: Final Weight/Volume:

50 mL

Leach Date:

N/A

Analysis Batch:

360-79587

Instrument ID:

Lachat

Client Matrix: Dilution:

MSD Lab Sample ID:

Water

Prep Batch: Leach Batch: 360-79479 N/A

Lab File ID: Initial Weight/Volume: Final Weight/Volume: N/A 50 mL 50 mL

Analysis Date:

09/06/2011 1513

360-35898-7

Prep Date: Leach Date: 09/02/2011 1415 N/A

% Rec.

MS Qual MSD Qua

Analyte

MS-

Limit 152 90 - 110 RPD

1

RPD Limit 20

4

4

Ammonia

MSD 145

	NOTE: %R = (<u>S</u>	<u>SSR-SR)</u> x 100%	When	e: SSR = Spiked SR	sample resul = Sample resul
	SA	SA = Spike added	•		. Sample Tesui
	MS/MSD Recovery Limits:				
	Alkalinity* = NA	Bicarbonate Alkalinity* = NA	Carbonate alkalinity* = NA	Ammonia* (LACHAT) = 75	-125%
	Chloride*(SM 4500 Cl) 🗹= 75-125%	Specific Conductivity * = NA	Total Organic Carbon* = NA	TDC** - NA	
	Oil & Grease* = NA	COD Low* $\Box = 75-125\%$	COD High* $\square = 75-125\%$	Nitrate Nitrogen as N** ☐ = 75	-125%
	Nitrite Nitrogen as N** 🗹 = 75-125%	Hardness* $\square = 75-125\%$	Sulfate (EPA 300.0)* = 75-125%	$pH^* = NA$ TSS* =	- NA
	Other parameter(list)	% R =	Rec Lin	nits =	
	* = Laboratory Limits **=	Olin QAPP Limits (MADEP has n	not yet defined LCS recovery limits for	wet chemistry analyses.)	
	NOTES: 1) If only one of the recoveries 2) If the MS/MSD was perform	for an MS/MSD pair is outside of the ced by the laboratory on a non-project sa		y. Use professional judgment for	the MS/MSD flags.
qualify page 12 MS/MS ACTIO	N: MS/MSD flags only apply to the samp positive results as estimated (J). If the record precovery is < 30% and the sample is non N: Laboratory control limits apply when the d, but no flags are applied.	overies of the MS and MSD are lower -detect, the results are considered unusa	than the lower control limit but $> 30\%$, able and flagged (R).	qualify both positive results and r	ion-detects (J). If the
	6.5 Are any RPDs for MS/MSD recoveries	es outside of the QA/QC limits?			
	NOTE: RPD = $\frac{S - D}{(S + D)/2}$ x 100% W	There $S = MS$ result $D = MSD$ result	Yes No No	N/A [] Comments:	
	MC/MCD DDD I imita				
	MS/MSD RPD Limits:				
	RPD ≤20			•	
				•	
7.0					

ACTIC	N: If the RPD i	_	pecified limits, qualify		nnalyte as estimated (J)					
	pH* □ = 3%		Specific Conductivity	*= 5%	TSS** □ = 6%		7	TDS** □ = 69	⁄ ₀	
8.0	Sampling Acc	curacy								
	, , ,		oles are collected directed will not be collected	-	process stream, or					
		ate blanks colle pples from the s	ected? Prior to evaluate enior chemist.	iting rinsate blanks	s, obtain a list of the	Yes [_]	No 🔄	<u></u> -	Comments:	
	8.2 Do any rin	sate blanks hav	e positive results?			Yes [_]	No []	N/A [_i	Comments:	
	If the sample of	concentration is	vs. blank results to d $< 5 \times$ blank value, flag $> 5 \times$ blank value, no be collection of rinsate	g sample result non qualification is nee	-detect "U" at the PQL					ng to the table below.
9.0	Field Duplica	<u>tes</u>								
	9.1 Were fi		amples collected? Obt	ain a list of sample	s and their associated	Yes []	No [Comments:	
		-	lected per the required			Yes [No []	N/A	Comments:	
QA	PP/IRSWP □	MADEP Op	tion 1(1 per 20) □	MADEP Option	3 (1 per 10) □			/		
	9.3 Was the R attach to this	-	waters < 50% for soils	? Calculate the R	PD for results and	Yes []	No []	N/A [_]	Comments:	

WET CHEM.doc Page 8 of 9

ACTION:. Qualify data (J) for both sample results if the RPD exceeded.				
Was any of the data qualified?	Yes []	No []	N/A []	Comments:
If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.				

REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

Page 9 of 9

Version 3, October 2008

OLIN-WILMINGTON LEVEL I DATA QUALITY EVALUATION STANDARD OPERATING PROCEDURE AND CHECKLIST WET CHEMISTRY PARAMETERS BY VARIOUS METHODS

MM	UMM	7/2	//	
Chris		1 10	14/	11
,0-3590	62-1	<i>!</i>		
07110016	,12		_	
		MMUL M. Chris Ricard 0-35962-1 07110016,12		

specific conductivity ammonia chloride, southate

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for Sampling, Data Evaluation and Reporting Activities." MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

	not define criteria, QA/QC	requirements will d	efault to limits emplo	byed by the laboratory.					
1.0	Laboratory Deliverable R	equirements			·			•	
æ	1.1 Laboratory Informati Check items received.						N/A []		
	Name of Laboratory Client Information:	☑ Address	☑ Project ID	☑ Phone #	☐ Sample	identificatio	on – Field and	Laboratory	
	Client Information:	□ Name	☐ Address	☐ Client Contact	(IDs must be	e cross-refe	renced)		
ACTI	ON: If no, contact lab for								
	1.2 Laboratory Report	t Certification St	atement ·		Yes [No [_]	N/A []	Comments:	
	Does the laboratory repo	ort include a comp	leted Analytical Re	port Certification in the	required form	nat?			
ACTIC	DN : If no, contact lab for su	ubmission of miss	ing certification or c	certification with correct	format.				
	1.3 Laboratory Case N	Narrative:			Yes [🗾	No []	N/A []	Comments:	
	☐ Narrative serves as a	n exception report f	or the project and me	ethod QA/QC performance		rrative includ fication State	•	ation of each discrepai	ncy on the
ACTIC	DN : If no, contact lab for su	ubmission of miss	ing or illegible infon	mation.					
	1.4 Chain of Custody (C	COC) copy present	with all documentation	on completed?	Yes [_]	No [_]	N/A [_]	Comments:	
	Does the laboratory report	include copies of C	hain of Custody form	ns containing all samples i	in this SDG?				
	NOTE: Olin receives and	maintains the origir	nal COC.						
ACTIO	ON: If no, contact lab for sub	mission of copy of	missing completed C	COC.					

1.5 Sample Receipt Information (Cooler Receipt Form): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

	Yes 🗾	No []	N/A [_]	Comments:	
Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered of Container type noted. Condition observed pH verified (where applicable) Field and lab like the container type noted.			ion, temperatu	ne requirement do	oes not apply).
Container type noted La Condition observed 12 pH verified (where applicable) La Field and lab in	Ds cross refe	rencea			
ACTION: If no, contact lab for submission of missing or incomplete documentation.		*	,		
1.5.1 Were the correct bottles and preservatives used?			N/A []		
✓Ammonia,– 1 Liter polyethylene/H₂SO₄ to pH<2,cool to 4°C	Yes 🔼	No	N/A	Comments:	
Oil & Grease – 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C					*.
Alkalinity – 1 Liter polyethylene/cool to 4°C					
Chemical Oxygen Demand – 50 mL polyethylene/H ₂ SO ₄ to pH<2,cool to 4°C					
Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C					
Nitrate/nitrite - H2SO4 to pH<2,cool to 4°C					
Organic Carbon – 500 mL amber glass bottle/HCl or H ₂ SO ₄ to pH<2,cool to 4°C					
Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C					
Phenolics - H ₂ SO ₄ to pH<2,cool to 4°C					
Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C					
ACTION: If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler temperature exceeds 10°C. Rejection of data requires professional judgment					
1.5.2 Were all samples delivered to the laboratory without breakage?	Yes []	No []	N/A []	Comments:	
1.5.3 Does the <i>Cooler Receipt Form</i> or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?	Yes []	No 🗾	N/A []	Comments:	

Page 2 of 9

	Sample Results Section: Was the report for each sample?	ollowing information supplied in the	laboratory Yes [No []	N/A [_] Comments:	/
☑ ÆField ID a ☑ Clean-up m	and Lab ID Date and time conethod Analysis method	ollected Analyst Initials Preparation method	☐ Dilution Factor☐ Date of preparation/extraction	☑ % moisture or solids //digestion clean-up and analysis,	Reporting limit where applicable
☑ Matrix	☐ Target analytes and		Units (soils must be reported	in dry weight)	
	no, contact lab for submission of miss				
	ach sample batch?	ng information provided in the laborat		N/A [_] Comments:	
☑ Method bla	ank results DLCS recoveries	MS/MSD recoveries and RPDs	/ Laboratory duplicate results (where a	applicable)	
ACTION: If 1	no, contact lab for submission of missi	•			
2.0 <u>Hold</u>	<u>ing Times</u>		Yes 🔲 No 🗾	N/A] Comments:	
/	/ -	ned from date of collection to date of demand, chloride, organic carbon, or			
·	Alkalinity = 14 days	Sulfide, TDS, TSS = 7 days Nitrate + Nitrite as N = 28 days	pH = analyze immediately	Nitrate nitrogen as $N = 4$	8 hrs
	Nitrite nitrogen as N = 48 hrs 'E: List samples that exceed hold time	•			
ACTION: If	• .	I qualify results (J). For water sample		,	ect results. Professional
3.0	Laboratory Method		Yes No No	N/A [_] Comments:	
3.1 W	Vas the correct laboratory method used	?			

ACTION: If no, contact lab to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change or to request variance.

WET CHEM.doc Page 3 of 9

		 -					
	3.2 Are the practical quantitation ☐ QAPP/IRSWP ☐ Lab?	limits the same as those speci	fied by the	Yes 🔝	No []	N/A []	Comments:
	Note: The MADEP QA/QC Guidelines of therefore all criteria will default to values of define criteria, QA/QC requirements defamay also apply,	tipulated in the QAPP*. Where the Q	APP does not		• •		
	Ammonia* 🗹 = 0.1 mg/ L	Alkalinity** $\Box = 1 \text{ mg/L}$		arbonate Alka	-		Carbonate Alkalinity** $\square = 1 \text{ mg/L}$
	Nitrate Nitrogen as $N^* \square = .05 \text{ mg/L}$	Nitrite Nitrogen as $N* \square = .01 \text{ m}$	ng/L Chl	loride* □= 1	mg/L		Hardness $*\Box = 2 \text{ mg/L}$
	Spec. Cond.** 🗔 3 umhos/cm	Total Organic Carbon** □ = 1 n	ıg/L Oil	l & Grease* □	$\Box = 5.5 \text{ mg}$	/L	Sulfate (EPA 300.0)* = 2 mg/L
	COD:* Low – 20 mg/L	COD* High - 50 mg/L □	TD	S* □ = 10 m	ıg/L		TSS* \square = 5 mg/L
	pH* □ <2 to > 12	Phenolic - 0.01 mg/L					
	Other parameter(list)	PQL =	_ □ Source of	f PQL =			
	Other parameter(list)	PQL =	_ □ Source of	f PQL =			
ACTIO	ON: If no, evaluate change with respect to s	ample matrix, preparation, dilution, r	noisture, etc. If s	sample PQL is	is indetermi	nate, contact la	ab for explanation.
	3.3 Are the appropriate parameter results			,	,	N/A []	
ACTIC	ON: If no, check Request for Analysis to ver	rify if method was ordered and COC	to verify that it v	was sent, and	contact lab	for resubmiss	ion of the missing data
	3.4 If dilutions were required, were dilution	n factors reported?		Yes [No []	N/A []	Comments:
ACTIO	ON: If no, contact the lab for submission.						
4.0	Method Blanks			Yes [No []	N/A []	Comments:
	4.1 Are the Method Blank Summaries pro						
ACTIO	ON: If no, call the laboratory for submission			,			
	4.2 Was a method blank analyzed for ea 20 or less?	ch analysis batch of wet chemistry fie	eld samples of	Yes 🗾	No [_]	N/A [_]	Comments:
1							

Page 4 of 9

ACTIO	N: If no,	document discrepancy in case narrative and contact lab for justification. Consult seni	or chemist fo	or action nee	ded.	
	4.3 Is the	e method blank less than the PQL? (See Section 3.2 for PQLs).	Yes [_]	/ No []	N/A []	Comments:
	accordin	any method blanks have positive results for wet chemistry parameters? Qualify data g to the following: Imple concentration is $< 5 \times$ blank value, flag sample result non-detect "U" at the	Yes []	No Lid	N/A [_]	Comments:
	PQL or	the concentration reported if greater than the PQL. mple concentration is > 5 × blank value, no qualification is needed.				•
ACTIC qualifier		y blank has positive results, list all the concentrations detected and flagging level (fla	gging level =	= 5 × blank	value) on the o	checklist. List all affected samples and their
						·
5.0	Laborat	tory Control Standards		,		
	5.1	Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less?	Yes	No [_]	N/A []	Comments:
ACTIO judgmei	N: If no	, call laboratory for LCS form submittal. If data is not available, use professional mine qualification actions for data associated with the batch.	,	,		
	5.2	Is a LCS Summary Form present?	Yes [_	No []	N/A []	Comments:
ACTIO	N: If no,	contact lab for resubmission of missing data.				
	5.3	Is any wet chemistry analyte LCS recovery outside the control limits?	Yes []	No [_	N/A []	Comments:

Page 5 of 9

WET CHEM.doc

	LCS.	<u>Limits:</u>							
	Total C	hity** $\Box = 80-120\%$ Organic Carbon** $\Box = 80-120\%$ Low* $\Box = 80-120\%$ ess* $\Box = 80-120\%$	•	$CDS^{**} \square = 80-120\%$ Oil & COD High* $\square = 80-120\%$ Nitra			-120% = 80- 120% -120%	Specific Conductivity * Ammonia Nitrogen as Nitrite Nitrogen as N pH* □ = 98-102%	N* = 80-120%
	Other p	parameter(list)	%R =			☐ Rec Li	nits=		
	Other p	parameter(list)	%R =	:		☐ Rec Li	nits =		
			(MADEP has not yet defined LCS						,
5.0 Matrix	<u>Matrix</u> x spikes 1	x Spikes may be collected at different f	non-detect results are rejected (R).	• .	·				
респ		• •	ents for each set with the senior che			,			
\ <i>C</i> TI	6.1	were project-specific MS/MSDs, contact senior chemist to see if a	s analyzed? List project samples that w	vere spikea.	Yes []	No []	N/A []	Comments:	
ic i i	6.2	Is the MS/MSD Recovery Form	*					•	
ACTIO		o, contact lab for resubmission of	•	•	Yes []	No []	N/A	Comments:	
	6.3	Were matrix spikes analyzed matrix?	at the required frequency of 1 per 20) samples per	Yes []	•	N/A [/	
CTIC	ON: If an	y matrix spike data is missing, ca	Il lab for resubmission.					•	
	6.4	Are any wet chemistry analyte	spike recoveries outside of the QC lim	its?	Yes []	No []	N/A [Comments:	

WET CHEM.doc Page 6 of 9

	NOTE: %R = SA	(SSR-SR)		0% = Spike added		Wher	e:	SSR	=	Spiked SR	sample = Sample	result e result
	MS/MSD Recovery Limits:		571	Брис иссос								
	Alkalinity* = NA	Bicarbo	onate Alka	nlinity* = NA	Carbonate alkalinity	v* = NA	Ammoi	nia* (L <i>A</i>	CHA	Γ) □ = 75	5-125%	
	Chloride*(SM 4500 Cl) □= 75-125%			ivity * = NA	Total Organic Carb		TDS**	-		,		
	Oil & Grease* = NA	CODL	ow* □ =	75-125%	COD High* □ = 75	5-125%	Nitrate	Nitroge	n as N³	** = 7:	5-125%	
	Nitrite Nitrogen as $N^{**} \square = 75-125\%$	% Hardne	ess* □ =	75-125%	Sulfate (EPA 300.0))* □ = 75 - 125%	pH* =	NA		TSS* =	= NA	
	Other parameter(list)			%R=	=	□ Rec Lim	nits =					
	* = Laboratory Limits	** = Olin QAPP	Limits	(MADEP has r	not yet defined LCS red	covery limits for	wet cher	mistry a	nalys	9s.)		
	NOTES: 1) If only one of the recover 2) If the MS/MSD was perf						/. Use pro	ofession	al judg	ment for	the MS/MSI	D flags.
qualify p	N: MS/MSD flags only apply to the spositive results as estimated (J). If the D recovery is $\leq 30\%$ and the sample is	recoveries of th	ne MS and	l MSD are lower	than the lower control l							
	N: Laboratory control limits apply will do not flags are applied.	hen spiked samp	ole results	fall within the no	ormal calibration range.	If dilutions are re	equired d	ue to hi	gh sam	ple conce	entrations, th	e data is
	6.5 Are any RPDs for MS/MSD reco	veries outside of	the QA/Q	C limits?			,					
	NOTE : RPD = $\frac{S - D}{(S + D)/2}$ x 100%		S result (SD result		Yes []	No [_] N	I/A [Con	ments	:		
	,											
	MS/MSD RPD Limits:											
	RPD ≤20											
7.0	Laboratory Duplicate											
	Are the RPDs for the laboratory dup	licates <2004 un	loss other									

WET CHEM.doc Page 7 of 9

ACTIO		greater than specified limits, qualif		t analyte as estimated (J)	•			
-	pH* □ = 3%	Specific Conductivi	ty *12 = 5%	$TSS^{**} \square = 6\%$		T	TDS** □ = 6%	6
8.0	Sampling Accu	racy						
		d water samples are collected d Rinse blanks will not be collected		o, process stream, or			·	
		e blanks collected? Prior to evalules from the senior chemist.	uating rinsate blan				N/A []	
	8.2 Do any rinsa	te blanks have positive results?			Yes []	No []	N/A	Comments:
ACTI	ACTION: Evaluate rinsate results vs. blank results to determine if contaminant may be laboratory-derived. If not lab-related, qualify according to the table below. If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL. If the sample concentration is > 5 × blank value, no qualification is needed.							
NOTE	: MADEP does r	not require the collection of rinsa	nte blanks.					
9.0	Field Duplicate	<u>s</u>						
	9.1 Were field duplication	d duplicate samples collected? Otates.	otain a list of sampl	es and their associated	Yes []	No [N/A [_]	Comments:
	9.2 Were field	duplicates collected per the required	d frequency?		Yes []	No []	N/A	Comments:
QA	.PP/IRSWP □	MADEP Option 1(1 per 20) □	MADEP Option	n 3 (1 per 10) 🛮		•	,	
	9.3 Was the RPI attach to this r	$D \le 30\%$ for waters $\le 50\%$ for soil eview.	s? Calculate the	RPD for results and	Yes []	No [] .	N/A []	Comments:

WET CHEM.doc Page 8 of 9

ACTION:. Qualify data (J) for both sample results if the RPD exceeded.					
Was any of the data qualified?	Yes [_]	No 🔝	N/A [_]	Comments:	
If so, apply data qualifiers directly to the DQE copy of laboratory report and flag pages for entry in database.					

REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

WET CHEM.doc Page 9 of 9



FILE COPY

ANALYTICAL REPORT

Job Number: 360-35898-1

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

Job Description: Olin Chemical Surfacewater Quarterly

9/21/11

For:

Olin Corporation PO BOX 248 Charleston, TN 37310-0248

Attention: Mr. James Cashwell

Joseph a. Cheur J.

Approved for release.
Joe Chimi
Report Production Representative
9/7/11 11:18 AM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
09/07/2011

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.



Table of Contents

Cover Title Page	1
Report Narrative	3
Executive Summary	6
Method Summary	9
Method / Analyst Summary	10
Sample Summary	11
Sample Results	12
Sample Datasheets	13
Data Qualifiers	27
QC Results	28
Qc Association Summary	29
Qc Reports	33
Shipping and Receiving Documents	47
Sample Receipt Checklist	48
Client Chain of Custody	49

	MassDEP Analytical Protocol Certification Form								
Labor	atory Name:	TestAme	erica Westfield		Project #:		360-3589	8-1	
Proje	ect Location:	Wilm	ington, MA		RTN:				
This f	orm provide	es certifications	for the following	data	a set: list Laborato	ry Sample ID Nu	ımber(s):		
360-3	5898-(1-7)								
Matric	es: X	Groundwater/Su	ırface Water		Soil/Sediment	Drinking Water	Air	Other:	
CAM	Protocols	(check all that	apply below):						
8260 \	VOC	7470/7471 Hg	Mass DEP VP	Н	8081 Pesticides	7196 Hex Cr		Mass DEP APH	
CAM I		CAM III B	☐ CAM IV A		CAM V B	CAM VI B [CAM IX A	
8270		7010 Metals	Mass DEP EP	H	8151 Herbicides	8330 Explosives	S	TO-15 VOC	
CAMI	IIB 📙	CAM III C	CAM IV B		CAM V C 9014 Total	CAM VIII A		CAM IX B	
6010 I	Metals	6020 Metals	8082 PCB		Cyanide/PAC	332.0 Perchlora	te		
CAM I		CAM III D	☐ CAM V A		CAM VI A	CAM VIII B [
	Affirmative	Responses to C	uestions A throu	ıah I	F are required for "	Presumptive Ce	ertainty" sta	atus	
					with those describe				
Α		•			eld or laboratory, and		•		
	method hold	ling time.	<u> </u>					X Yes No	
В	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?							X Yes No	
Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?							X Yes No		
D	"Quality Ass		• •	•	ting requirements sp or the Acquisition ar				
	Data"?	Land ADU Matha	do only Mag aga	h m c	athod conducted with	aut aignificant		X Yes No	
E			•		ethod conducted with or a list of significan	-		∐ Yes ☐ No	
		· , ·		٠,,	e analyte list reporte	•	d?	☐ Yes ☐ No	
F		•	•		nce standard non-c				
			,		" responses to Ques		,	X Yes No	
	·		•		e required for "Pre	•		i	
G	protocol(s)?	-			ing limits specified in			X Yes No1	
			•	•	" status may not ned 1056 (2)(k) and WCS	•	data usabil	ity and	
Н					e CAM protocol(s) a			X Yes No	
1		•	•		,		ol(o) 2		
1 All no		•			specified in the selected laboratory narrative) (פ)ות	Yes X No	
	· ·				•		inquiry of th	oso rosponsible for	
obtain	I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.								
		C+-	1-						
Signat	ture:	200	toluna	22000	Position:	L	aboratory D	irector	
Printe	d Name:	Steven	C. Hartmann		Date:		9/7/11 10	:31	
This form	his form has been electronically signed and approved								

CASE NARRATIVE

Client: Olin Corporation

Project: Olin Chemical Surfacewater Quarterly

Report Number: 360-35898-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 08/23/2011; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 0.3 and 1.0 C.

TOTAL METALS (ICP)

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010B. The samples were prepared on 08/25/2011 and analyzed on 08/26/2011.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the metals analyses.

All quality control parameters were within the acceptance limits.

DISSOLVED METALS

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 09/01/2011.

Sodium was detected in method blank MB 360-79397/2 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged "J". If the associated sample reported a result above the MDL and/or RL, the result has been "B" flagged. Refer to the QC report for details.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No other difficulties were encountered during the dissolved metals analyses.

All other quality control parameters were within the acceptance limits.

ANIONS (28 DAY HOLD TIME)

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/24/2011.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-ISCO3 (360-35898-3)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X], OC-SW-PZ-18RSW (360-35898-6)[10X] and OC-SW-SD-17 (360-35898-7)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

ANIONS (48 HR HOLD TIME)

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW

(360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for anions (48 hr hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/24/2011.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-ISCO3 (360-35898-3)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X] and OC-SW-SD-17 (360-35898-7)[10X] required dilution prior to analysis due to the presence of elevated Chloride concentration, which co-elutes with the Nitrite peak. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

AMMONIA

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 08/30/2011 and 09/02/2011 and analyzed on 08/30/2011 and 09/06/2011.

Ammonia failed the recovery criteria high for the MS and MSD of sample OC-SW-SD-17MS (360-35898-7) in batch 360-79587. The associated LCS recovered within control limits. Refer to the QC report for details.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X], OC-SW-PZ-18RSW (360-35898-6)[5X] and OC-SW-SD-17 (360-35898-7)[5X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the ammonia analyses.

All other quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 09/01/2011.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

EXECUTIVE SUMMARY - Detections

Lab Sample ID C Analyte	lient Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-35898-1	OC-SW-ISCO1					
Aluminum		150		100	ug/L	6010B
Chromium		16		5.0	ug/L	6010B
Sodium		73000		2000	ug/L	6010B
Sulfate		130		20	mg/L	300.0
Nitrate as N		0.080		0.050	mg/L	300.0
Chloride		110		10	mg/L	300.0
Ammonia		37		1.0	mg/L	L107-06-1B
Specific Conductance		790		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		40	J	100	ug/L	6010B
Chromium		8.6		5.0	ug/L	6010B
Sodium		90000	В	2000	ug/L	6010B
360-35898-2	OC-SW-ISCO2					
Aluminum		230		100	ug/L	6010B
Chromium		51		5.0	ug/L	6010B
Sodium		150000		2000	ug/L	6010B
Sulfate		580		20	mg/L	300.0
Nitrate as N		0.79		0.050	mg/L	300.0
Chloride		170		10	mg/L	300.0
Ammonia		98		1.0	mg/L	L107-06-1B
Specific Conductance		2200		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		36	J	100	ug/L	6010B
Chromium		13		5.0	ug/L	6010B
Sodium		190000	В	2000	ug/L	6010B
360-35898-3	OC-SW-ISCO3					
Aluminum		53	J	100	ug/L	6010B
Chromium		1.2	J	5.0	ug/L	6010B
Sodium		82000		2000	ug/L	6010B
Sulfate		22		2.0	mg/L	300.0
Nitrate as N		0.70		0.050	mg/L	300.0
Chloride		200		10	mg/L	300.0
Ammonia		1.7		0.10	mg/L	L107-06-1B
Specific Conductance		800		1.0	umhos/cm	SM 2510B
Dissolved						
Sodium		99000	В	2000	ug/L	6010B

EXECUTIVE SUMMARY - Detections

Lab Sample ID Cl Analyte	ient Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-35898-4	OC-SW-PZ-16RRSW					
Aluminum		1900		100	ug/L	6010B
Chromium		560		5.0	ug/L	6010B
Sodium		160000		2000	ug/L	6010B
Sulfate		620		20	mg/L	300.0
Nitrate as N		0.39		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
Ammonia		110		1.0	mg/L	L107-06-1B
Specific Conductance		2300		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		1500		100	ug/L	6010B
Chromium		490		5.0	ug/L	6010B
Sodium		200000	В	2000	ug/L	6010B
360-35898-5 Aluminum	OC-SW-PZ-17RRSW	5700		100	ug/L	6010B
Chromium		1300		5.0	ug/L	6010B
Sodium		160000		2000	ug/L	6010B
Sulfate		600		2000	=	300.0
					mg/L	
Nitrate as N		0.18		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
Ammonia		110		1.0	mg/L	L107-06-1B
Specific Conductance		2200		1.0	umhos/cm	SM 2510B
Dissolved Aluminum		1400		100	ug/L	6010B
Chromium		600		5.0	ug/L ug/L	6010B
			В		=	
Sodium		190000	В	2000	ug/L	6010B
360-35898-6	OC-SW-PZ-18RSW					
Aluminum		140		100	ug/L	6010B
Chromium		15		5.0	ug/L	6010B
Sodium		67000		2000	ug/L	6010B
Sulfate		130		20	mg/L	300.0
Nitrate as N		0.078		0.050	mg/L	300.0
Chloride		110		10	mg/L	300.0
Ammonia		33		0.50	mg/L	L107-06-1B
Specific Conductance		790		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		36	J	100	ug/L	6010B
Chromium		8.2		5.0	ug/L	6010B
Sodium		89000	В	2000	ug/L	6010B

EXECUTIVE SUMMARY - Detections

Lab Sample ID Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method	
360-35898-7	OC-SW-SD-17						
Aluminum		1200		100	ug/L	6010B	
Chromium		280		5.0	ug/L	6010B	
Sodium		96000		2000	ug/L	6010B	
Sulfate		240		20	mg/L	300.0	
Nitrate as N		0.16		0.050	mg/L	300.0	
Chloride		130		10	mg/L	300.0	
Ammonia		41		0.50	mg/L	L107-06-1B	
Specific Conductano	ce	1100		1.0	umhos/cm	SM 2510B	
Dissolved							
Aluminum		920		100	ug/L	6010B	
Chromium		280		5.0	ug/L	6010B	
Sodium		140000	В	2000	ug/L	6010B	

METHOD SUMMARY

Client: Olin Corporation Job Number: 360-35898-1

Description	Lab Location	Method Preparation Method
Matrix: Water		
Dissolved Metals Sample Filtration, Field	TAL WFD	SW846 6010B FIELD_FLTRD
Total Metals Preparation, Total Metals	TAL WFD TAL WFD	SW846 6010B SW846 3010A
Chloride & Sulfate	TAL WFD	40CFR136A 300.0
Nitrate & Nitrite	TAL WFD	40CFR136A 300.0
Nitrogen Ammonia Distillation, Ammonia	TAL WFD TAL WFD	LACHAT L107-06-1B Distill/Ammonia
Conductivity, Specific Conductance	TAL WFD	SM SM 2510B

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Method	Analyst	Analyst ID
SW846 6010B	Smith, Tim J	TJS
40CFR136A 300.0	Emerich, Rich W	RWE
LACHAT L107-06-1B	Emerich, Rich W	RWE
SM SM 2510B	Stewart, Alyse M	AMS

SAMPLE SUMMARY

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-35898-1	OC-SW-ISCO1	Water	08/23/2011 1025	08/23/2011 1645
360-35898-2	OC-SW-ISCO2	Water	08/23/2011 0915	08/23/2011 1645
360-35898-3	OC-SW-ISCO3	Water	08/23/2011 0900	08/23/2011 1645
360-35898-4	OC-SW-PZ-16RRSW	Water	08/23/2011 0925	08/23/2011 1645
360-35898-5	OC-SW-PZ-17RRSW	Water	08/23/2011 0940	08/23/2011 1645
360-35898-6	OC-SW-PZ-18RSW	Water	08/23/2011 1010	08/23/2011 1645
360-35898-7	OC-SW-SD-17	Water	08/23/2011 0950	08/23/2011 1645

SAMPLE RESULTS

2000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-ISCO1

Lab Sample ID: 360-35898-1 Date Sampled: 08/23/2011 1025

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

1.0 Dilution: Initial Weight/Volume: 50 mL 08/26/2011 1221 Analysis Date: Final Weight/Volume: 50 mL

08/25/2011 0735 Prep Date:

Qualifier RL Analyte Result (ug/L) MDL Aluminum 150 13 100 Chromium 16 0.65 5.0 280 Sodium 73000 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

09/01/2011 1347 Analysis Date: Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL Aluminum 13 100 40 J Chromium 8.6 0.65 5.0 Sodium В 280

90000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-ISCO2

Lab Sample ID: 360-35898-2 Date Sampled: 08/23/2011 0915

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP
Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

Dilution: 1.0 Initial Weight/Volume: 50 mL Analysis Date: 08/26/2011 1223 Final Weight/Volume: 50 mL

Prep Date: 08/25/2011 0737

Qualifier RL Analyte Result (ug/L) MDL Aluminum 230 13 100 Chromium 51 0.65 5.0 280 Sodium 150000 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP
N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

Analysis Date: 09/01/2011 1359 Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL 13 100 Aluminum 36 J Chromium 13 0.65 5.0 Sodium В 280 190000 2000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-ISCO3

Lab Sample ID: 360-35898-3 Date Sampled: 08/23/2011 0900

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP
Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

 Dilution:
 1.0
 Initial Weight/Volume:
 50 mL

 Analysis Date:
 08/26/2011 1232
 Final Weight/Volume:
 50 mL

Prep Date: 08/25/2011 0737

RL Analyte Result (ug/L) Qualifier MDL Aluminum 53 13 100 J Chromium 1.2 J 0.65 5.0 82000 280 Sodium 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP
N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

Analysis Date: 09/01/2011 1408 Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL Aluminum 13 100 ND Chromium ND 0.65 5.0 Sodium В 280 99000 2000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-PZ-16RRSW

Lab Sample ID: 360-35898-4 Date Sampled: 08/23/2011 0925

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

Dilution: 1.0 Initial Weight/Volume: 50 mL 08/26/2011 1235 Analysis Date: Final Weight/Volume: 50 mL

08/25/2011 0737 Prep Date:

Sodium

Qualifier RL Analyte Result (ug/L) MDL Aluminum 1900 13 100 Chromium 560 0.65 5.0 280 Sodium 160000 2000

6010B Dissolved Metals-Dissolved

В

280

2000

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP

N/A N/A Lab File ID: 090111b.csv Dilution: 1.0 Initial Weight/Volume: 1.0 mL

09/01/2011 1411 Analysis Date: Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL 13 100 Aluminum 1500 Chromium 490 0.65 5.0

200000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-PZ-17RRSW

Lab Sample ID: 360-35898-5 Date Sampled: 08/23/2011 0940

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

1.0 Dilution: Initial Weight/Volume: 50 mL 08/26/2011 1238 Analysis Date: Final Weight/Volume: 50 mL

08/25/2011 0737 Prep Date:

Qualifier RL Analyte Result (ug/L) MDL Aluminum 5700 13 100 Chromium 1300 0.65 5.0 280 Sodium 160000 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP

N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

09/01/2011 1414 Analysis Date: Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL 13 100 Aluminum 1400 Chromium 600 0.65 5.0 Sodium В 280 190000 2000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-PZ-18RSW

Lab Sample ID: 360-35898-6 Date Sampled: 08/23/2011 1010

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

1.0 Dilution: Initial Weight/Volume: 50 mL 08/26/2011 1241 Analysis Date: Final Weight/Volume: 50 mL

08/25/2011 0737 Prep Date:

Qualifier RL Analyte Result (ug/L) MDL Aluminum 140 13 100 Chromium 15 0.65 5.0 280 Sodium 67000 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

09/01/2011 1418 Analysis Date: Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL 13 100 Aluminum 36 J Chromium 8.2 0.65 5.0 Sodium В 280 89000 2000

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: OC-SW-SD-17

Lab Sample ID: 360-35898-7 Date Sampled: 08/23/2011 0950

Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method: 6010B Analysis Batch: 360-79049 Instrument ID: Varian ICP Prep Method: 3010A Prep Batch: 360-78938 Lab File ID: 082611a.csv

1.0 Dilution: Initial Weight/Volume: 50 mL 08/26/2011 1244 Analysis Date: Final Weight/Volume: 50 mL

08/25/2011 0737 Prep Date:

Qualifier RL Analyte Result (ug/L) MDL Aluminum 1200 13 100 Chromium 280 0.65 5.0 280 Sodium 96000 2000

6010B Dissolved Metals-Dissolved

Analysis Method: 6010B Analysis Batch: 360-79397 Instrument ID: Varian ICP N/A N/A Lab File ID: 090111b.csv

Dilution: 1.0 Initial Weight/Volume: 1.0 mL

09/01/2011 1421 Analysis Date: Final Weight/Volume: 1.0 mL

Prep Date: N/A

RL Analyte Result (ug/L) Qualifier MDL 920 13 100 Aluminum Chromium 280 0.65 5.0 Sodium В 280 140000 2000

General Chemistry

Client Sample ID: OC-SW-ISCO1

Lab Sample ID: 360-35898-1 Date Sampled: 08/23/2011 1025

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.080		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-79061	Analysis Date:	08/24/2011	1855			
Sulfate	130		mg/L	20	20	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	1911			
Chloride	110		mg/L	10	10	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	1911			
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
	Analysis Batch: 360-79065	Analysis Date:	08/24/2011	1911			
Ammonia	37		mg/L	1.0	1.0	10	L107-06-1B
	Analysis Batch: 360-79216	Analysis Date:	08/30/2011	1541			
	Prep Batch: 360-79183	Prep Date: 08/	30/2011 115	54			
Specific Conducta	ance 790		umhos/cm	1.0	1.0	1.0	SM 2510B
•	Analysis Batch: 360-79387	Analysis Date:	09/01/2011	1215			

General Chemistry

Client Sample ID: OC-SW-ISCO2

Lab Sample ID: 360-35898-2 Date Sampled: 08/23/2011 0915

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.79		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-79061	Analysis Date:	08/24/2011	1959			
Sulfate	580		mg/L	20	20	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2015			
Chloride	170		mg/L	10	10	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2015			
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
	Analysis Batch: 360-79065	Analysis Date:	08/24/2011	2015			
Ammonia	98		mg/L	1.0	1.0	10	L107-06-1B
	Analysis Batch: 360-79216	Analysis Date:	08/30/2011	1542			
	Prep Batch: 360-79183	Prep Date: 08/	30/2011 115	54			
Specific Conducta	ance 2200	•	umhos/cm	n 1.0	1.0	1.0	SM 2510B
•	Analysis Batch: 360-79387	Analysis Date:	09/01/2011	1215			

General Chemistry

Client Sample ID: OC-SW-ISCO3

Lab Sample ID: 360-35898-3 Date Sampled: 08/23/2011 0900

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.70		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-79061	Analysis Date:	08/24/2011	2032			
Sulfate	22		mg/L	2.0	2.0	1.0	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2032			
Chloride	200		mg/L	10	10	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2048			
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
	Analysis Batch: 360-79065	Analysis Date:	08/24/2011	2048			
Ammonia	1.7		mg/L	0.10	0.10	1.0	L107-06-1B
	Analysis Batch: 360-79216	Analysis Date:	08/30/2011	1516			
	Prep Batch: 360-79183	Prep Date: 08/	30/2011 115	54			
Specific Conductar	nce 800	•	umhos/cm	n 1.0	1.0	1.0	SM 2510B
•	Analysis Batch: 360-79387	Analysis Date:	09/01/2011	1215			

General Chemistry

Client Sample ID: OC-SW-PZ-16RRSW

 Lab Sample ID:
 360-35898-4
 Date Sampled: 08/23/2011 0925

 Client Matrix:
 Water
 Date Received: 08/23/2011 1645

RLAnalyte Result Qual Units RL Dil Method Nitrate as N 0.39 0.050 0.050 1.0 300.0 mg/L Analysis Date: 08/24/2011 2104 Analysis Batch: 360-79061 Sulfate mg/L 20 20 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2120 Chloride 190 mg/L 10 10 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2120 Nitrite as N ND mg/L 0.10 0.10 10 300.0 Analysis Date: 08/24/2011 2120 Analysis Batch: 360-79065 Ammonia 1.0 10 L107-06-1B 110 mg/L 1.0 Analysis Batch: 360-79216 Analysis Date: 08/30/2011 1543 Prep Batch: 360-79183 Prep Date: 08/30/2011 1154 umhos/cm 1.0 SM 2510B Specific Conductance 2300 1.0 1.0 Analysis Date: 09/01/2011 1215 Analysis Batch: 360-79387

1.0

SM 2510B

1.0

Client: Olin Corporation Job Number: 360-35898-1

General Chemistry

Client Sample ID: OC-SW-PZ-17RRSW

Prep Batch: 360-79183

2200

Lab Sample ID: 360-35898-5 Date Sampled: 08/23/2011 0940 Client Matrix: Water Date Received: 08/23/2011 1645

RLAnalyte Result Qual Units RLDil Method Nitrate as N 0.18 0.050 0.050 1.0 300.0 mg/L Analysis Date: 08/24/2011 2208 Analysis Batch: 360-79061 Sulfate mg/L 20 20 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2224 Chloride 190 mg/L 10 10 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2224 Nitrite as N ND mg/L 0.10 0.10 10 300.0 Analysis Date: 08/24/2011 2224 Analysis Batch: 360-79065 Ammonia 10 L107-06-1B 110 mg/L 1.0 1.0 Analysis Batch: 360-79216 Analysis Date: 08/30/2011 1544

1.0

Specific Conductance umhos/cm Analysis Date: 09/01/2011 1215 Analysis Batch: 360-79387

Prep Date: 08/30/2011 1154

General Chemistry

Client Sample ID: OC-SW-PZ-18RSW

 Lab Sample ID:
 360-35898-6
 Date Sampled: 08/23/2011 1010

 Client Matrix:
 Water
 Date Received: 08/23/2011 1645

RLAnalyte Result Qual Units RLDil Method Nitrate as N 0.078 0.050 0.050 1.0 300.0 mg/L Analysis Date: 08/24/2011 2240 Analysis Batch: 360-79061 Sulfate mg/L 20 20 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2256 Chloride 110 mg/L 10 10 10 300.0 Analysis Batch: 360-79030 Analysis Date: 08/24/2011 2256 Nitrite as N ND mg/L 0.010 0.010 1.0 300.0 Analysis Date: 08/24/2011 2240 Analysis Batch: 360-79065 Ammonia 0.50 0.50 5.0 L107-06-1B mg/L Analysis Batch: 360-79216 Analysis Date: 08/30/2011 1545 Prep Batch: 360-79183 Prep Date: 08/30/2011 1154 umhos/cm 1.0 Specific Conductance 1.0 1.0 SM 2510B Analysis Date: 09/01/2011 1215 Analysis Batch: 360-79387

General Chemistry

Client Sample ID: OC-SW-SD-17

Lab Sample ID: 360-35898-7 Date Sampled: 08/23/2011 0950

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.16		mg/L	0.050	0.050	1.0	300.0
	Analysis Batch: 360-79061	Analysis Date:	08/24/2011	2313			
Sulfate	240		mg/L	20	20	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2329			
Chloride	130		mg/L	10	10	10	300.0
	Analysis Batch: 360-79030	Analysis Date:	08/24/2011	2329			
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
	Analysis Batch: 360-79065	Analysis Date:	08/24/2011	2329			
Ammonia	41		mg/L	0.50	0.50	5.0	L107-06-1B
	Analysis Batch: 360-79587	Analysis Date:	09/06/2011	1511			
	Prep Batch: 360-79479	Prep Date: 09/	02/2011 14	15			
Specific Conducta	nce 1100	-	umhos/cm	n 1.0	1.0	1.0	SM 2510B
•	Analysis Batch: 360-79387	Analysis Date:	09/01/2011	1215			

DATA REPORTING QUALIFIERS

Client: Olin Corporation Job Number: 360-35898-1

Lab Section	Qualifier	Description
Metals		
	В	Compound was found in the blank and sample.
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
General Chemistry		
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

QUALITY CONTROL RESULTS

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 360-78938					
LCS 360-78938/2-A	Lab Control Sample	Т	Water	3010A	
LCSD 360-78938/3-A	Lab Control Sample Duplicate	Т	Water	3010A	
MB 360-78938/1-A	Method Blank	Т	Water	3010A	
360-35898-1	OC-SW-ISCO1	Т	Water	3010A	
360-35898-2	OC-SW-ISCO2	Т	Water	3010A	
360-35898-3	OC-SW-ISCO3	Т	Water	3010A	
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	3010A	
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	3010A	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	3010A	
360-35898-7	OC-SW-SD-17	Т	Water	3010A	
Analysis Batch:360-79049)				
_CS 360-78938/2-A	Lab Control Sample	Т	Water	6010B	360-78938
CSD 360-78938/3-A	Lab Control Sample Duplicate	Т	Water	6010B	360-78938
MB 360-78938/1-A	Method Blank	Т	Water	6010B	360-78938
360-35898-1	OC-SW-ISCO1	Т	Water	6010B	360-78938
360-35898-2	OC-SW-ISCO2	Т	Water	6010B	360-78938
360-35898-3	OC-SW-ISCO3	Т	Water	6010B	360-78938
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	6010B	360-78938
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	6010B	360-78938
360-35898-6	OC-SW-PZ-18RSW	Т	Water	6010B	360-78938
360-35898-7	OC-SW-SD-17	Т	Water	6010B	360-78938
Analysis Batch:360-79397	7				
_CS 360-79397/1	Lab Control Sample	Т	Water	6010B	
_CSD 360-79397/8	Lab Control Sample Duplicate	Т	Water	6010B	
MB 360-79397/2	Method Blank	Т	Water	6010B	
360-35898-1	OC-SW-ISCO1	D	Water	6010B	
360-35898-1DU	Duplicate	D	Water	6010B	
360-35898-1MS	Matrix Spike	D	Water	6010B	
360-35898-2	OC-SW-ISCO2	D	Water	6010B	
360-35898-3	OC-SW-ISCO3	D	Water	6010B	
360-35898-4	OC-SW-PZ-16RRSW	D	Water	6010B	
360-35898-5	OC-SW-PZ-17RRSW	D	Water	6010B	
360-35898-6	OC-SW-PZ-18RSW	D	Water	6010B	
360-35898-7	OC-SW-SD-17	D	Water	6010B	

Report Basis

D = Dissolved

T = Total

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-7903	30				
LCS 360-79030/4	Lab Control Sample	Т	Water	300.0	
MB 360-79030/3	Method Blank	Т	Water	300.0	
360-35898-1	OC-SW-ISCO1	Т	Water	300.0	
360-35898-1MS	Matrix Spike	Т	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	Т	Water	300.0	
360-35898-2	OC-SW-ISCO2	Т	Water	300.0	
360-35898-3	OC-SW-ISCO3	Т	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	300.0	
360-35898-7	OC-SW-SD-17	Т	Water	300.0	
Analysis Batch:360-7906	61				
LCS 360-79061/5	Lab Control Sample	T	Water	300.0	
MB 360-79061/4	Method Blank	T	Water	300.0	
360-35898-1	OC-SW-ISCO1	T	Water	300.0	
360-35898-1MS	Matrix Spike	Т	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	Т	Water	300.0	
360-35898-2	OC-SW-ISCO2	T	Water	300.0	
360-35898-3	OC-SW-ISCO3	T	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	300.0	
360-35898-7	OC-SW-SD-17	T	Water	300.0	
Analysis Batch:360-7906	65				
LCS 360-79065/5	Lab Control Sample	Т	Water	300.0	
MB 360-79065/4	Method Blank	Т	Water	300.0	
360-35898-1	OC-SW-ISCO1	Т	Water	300.0	
360-35898-1MS	Matrix Spike	Т	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	Т	Water	300.0	
360-35898-2	OC-SW-ISCO2	Т	Water	300.0	
360-35898-3	OC-SW-ISCO3	Т	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	300.0	
360-35898-7	OC-SW-SD-17	T	Water	300.0	

QC Association Summary

		Report			
Lab Sample ID	Client Sample ID	Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Prep Batch: 360-79183					
LCS 360-79183/2-A	Lab Control Sample	Т	Water	Distill/Ammonia	
MB 360-79183/1-A	Method Blank	Т	Water	Distill/Ammonia	
360-35898-1	OC-SW-ISCO1	Т	Water	Distill/Ammonia	
360-35898-2	OC-SW-ISCO2	Т	Water	Distill/Ammonia	
360-35898-3	OC-SW-ISCO3	Т	Water	Distill/Ammonia	
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	Distill/Ammonia	
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	Distill/Ammonia	
360-35898-6	OC-SW-PZ-18RSW	Т	Water	Distill/Ammonia	
Analysis Batch:360-7921	16				
LCS 360-79183/2-A	Lab Control Sample	Т	Water	L107-06-1B	360-79183
MB 360-79183/1-A	Method Blank	Т	Water	L107-06-1B	360-79183
360-35898-1	OC-SW-ISCO1	Т	Water	L107-06-1B	360-79183
360-35898-2	OC-SW-ISCO2	Т	Water	L107-06-1B	360-79183
360-35898-3	OC-SW-ISCO3	Т	Water	L107-06-1B	360-79183
360-35898-4	OC-SW-PZ-16RRSW	Т	Water	L107-06-1B	360-79183
360-35898-5	OC-SW-PZ-17RRSW	Т	Water	L107-06-1B	360-79183
360-35898-6	OC-SW-PZ-18RSW	T	Water	L107-06-1B	360-79183
Analysis Batch:360-7938	37				
LCS 360-79387/2	Lab Control Sample	Т	Water	SM 2510B	
MB 360-79387/1	Method Blank	Т	Water	SM 2510B	
360-35898-1	OC-SW-ISCO1	Т	Water	SM 2510B	
360-35898-1DU	Duplicate	Т	Water	SM 2510B	
360-35898-2	OC-SW-ISCO2	Т	Water	SM 2510B	
360-35898-3	OC-SW-ISCO3	T	Water	SM 2510B	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	SM 2510B	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	SM 2510B	
360-35898-6	OC-SW-PZ-18RSW	T	Water	SM 2510B	
360-35898-7	OC-SW-SD-17	T	Water	SM 2510B	
Prep Batch: 360-79479					
LCS 360-79479/2-A	Lab Control Sample	Т	Water	Distill/Ammonia	
MB 360-79479/1-A	Method Blank	T	Water	Distill/Ammonia	
360-35898-7	OC-SW-SD-17	Т	Water	Distill/Ammonia	
360-35898-7MS	Matrix Spike	Ť	Water	Distill/Ammonia	
360-35898-7MSD	Matrix Spike Duplicate	T	Water	Distill/Ammonia	
Analysis Batch:360-7958	37				
LCS 360-79479/2-A	Lab Control Sample	Т	Water	L107-06-1B	360-79479
MB 360-79479/1-A	Method Blank	Т	Water	L107-06-1B	360-79479
360-35898-7	OC-SW-SD-17	Т	Water	L107-06-1B	360-79479
360-35898-7MS	Matrix Spike	T	Water	L107-06-1B	360-79479
360-35898-7MSD	Matrix Spike Duplicate	Т	Water	L107-06-1B	360-79479

Client: Olin Corporation Job Number: 360-35898-1

QC Association Summary

Report

Lab Sample ID Client Sample ID Basis Client Matrix Method Prep Batch

Report Basis

T = Total

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-78938

Method: 6010B Preparation: 3010A

Lab Sample ID: MB 360-78938/1-A Analysis Batch: 360-79049 Instrument ID: Varian ICP Client Matrix: Water Prep Batch: 360-78938 Lab File ID: 082611a.csv Leach Batch: Dilution: 1.0 N/A Initial Weight/Volume: 50 mL 08/26/2011 1134 Analysis Date: Units: ug/L Final Weight/Volume: 50 mL

Prep Date: 08/25/2011 0735

Leach Date: N/A

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	ND		280	2000

Lab Control Sample/ Method: 6010B
Lab Control Sample Duplicate Recovery Report - Batch: 360-78938 Preparation: 3010A

Varian ICP LCS Lab Sample ID: LCS 360-78938/2-A Analysis Batch: 360-79049 Instrument ID: Client Matrix: Prep Batch: 360-78938 Lab File ID: Water 082611a.csv Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 50 mL Analysis Date: 08/26/2011 1137 Units: ug/L Final Weight/Volume: 50 mL

Prep Date: 08/25/2011 0735

Leach Date: N/A

LCSD Lab Sample ID: LCSD 360-78938/3-A Analysis Batch: 360-79049 Instrument ID: Varian ICP Client Matrix: Water Prep Batch: 360-78938 Lab File ID: 082611a.csv Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 50 mL

Analysis Date: 08/26/2011 1140 Units: ug/L Final Weight/Volume: 50 mL

Prep Date: 08/25/2011 0735

Leach Date: N/A

% Rec. LCS LCSD **RPD** LCSD Qual Analyte Limit RPD Limit LCS Qual Aluminum 99 99 80 - 120 0 20 Chromium 100 80 - 120 20 99 0 Sodium 95 95 80 - 120 20 0

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79397

Method: 6010B Preparation: N/A

Lab Sample ID: MB 360-79397/2
Client Matrix: Water
Dilution: 1.0

Analysis Batch: 360-79397
Prep Batch: N/A
Leach Batch: N/A
Units: ug/L

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Varian ICP 090111b.csv 1.0 mL 1.0 mL

Analysis Date: 09/01/2011 1211

Prep Date: N/A Leach Date: N/A

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	355	J	280	2000

Lab Control Sample/ Method: 6010B
Lab Control Sample Duplicate Recovery Report - Batch: 360-79397 Preparation: N/A

Analysis Batch:

Prep Batch:

Leach Batch:

Analysis Batch:

Prep Batch:

Units:

Leach Batch:

LCS Lab Sample ID: LCS 360-79397/1 Client Matrix: Water

Water 1.0

09/01/2011 1209

Prep Date: N/A Leach Date: N/A

Dilution:

Analysis Date:

LCSD Lab Sample ID: LCSD 360-79397/8

Client Matrix: Water
Dilution: 1.0

Analysis Date: 09/01/2011 1402

Prep Date: N/A Leach Date: N/A Units: ug/L

360-79397 N/A N/A ug/L

360-79397

N/A

N/A

Instrument ID: Lab File ID: Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Initial Weight/Volume:

Final Weight/Volume:

Lab File ID:

Varian ICP 090111b.csv 1.0 mL 10 mL

LCSD Qual

Varian ICP

1.0 mL

10 mL

090111b.csv

% Rec.

Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual
Aluminum	99	103	80 - 120	3	20	
Chromium	98	101	80 - 120	4	20	
Sodium	94	97	80 - 120	3	20	

Client: Olin Corporation Job Number: 360-35898-1

Matrix Spike - Batch: 360-79397 Method: 6010B Preparation: N/A

Lab Sample ID: Analysis Batch: 360-79397 Varian ICP 360-35898-1 Instrument ID: Client Matrix: Water Prep Batch: N/A Lab File ID: 090111b.csv Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 1.0 mL 09/01/2011 1353 Final Weight/Volume: Analysis Date: Units: ug/L 10 mL

Prep Date: N/A

Leach Date: N/A

Analyte	Sample Result/	Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	40	J	5000	5130	102	75 - 125	
Chromium	8.6		1000	1000	99	75 - 125	
Sodium	90000		20000	106000	76	75 - 125	4

Duplicate - Batch: 360-79397 Method: 6010B Preparation: N/A

Lab Sample ID: Analysis Batch: 360-79397 Instrument ID: Varian ICP 360-35898-1 Client Matrix: Prep Batch: N/A Lab File ID: 090111b.csv Water Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 1.0 mL Units: ug/L Final Weight/Volume: 1.0 mL

Analysis Date: 09/01/2011 1350 Prep Date: N/A

Leach Date: N/A

Analyte	Sample Result	/Qual	Result	RPD	Limit	Qual
Aluminum	40	J	39.8	1	20	J
Chromium	8.6		8.58	0.2	20	
Sodium	90000		89400	1	20	

Lachat 8500

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79030 Method: 300.0 Preparation: N/A

Lab Sample ID: MB 360-79030/3 Analysis Batch: 360-79030 Instrument ID:

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Leach Batch: Dilution: 1.0 N/A Initial Weight/Volume: 1.0 mL 08/24/2011 1823 Analysis Date: Units: mg/L Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date: N/A

 Analyte
 Result
 Qual
 RL
 RL

 Sulfate
 ND
 2.0
 2.0

 Chloride
 ND
 1.0
 1.0

Lab Control Sample - Batch: 360-79030 Method: 300.0 Preparation: N/A

Lab Sample ID: LCS 360-79030/4 Analysis Batch: 360-79030 Instrument ID: Lachat 8500

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 1.0 mL Analysis Date: 08/24/2011 1839 Units: mg/L Final Weight/Volume: 10 mL

Prep Date: N/A Leach Date: N/A

Analyte Spike Amount Result % Rec. Limit Qual Sulfate 80.0 82.7 103 85 - 115 Chloride 40.0 103 85 - 115 41.4

Matrix Spike/ Method: 300.0

Matrix Spike Duplicate Recovery Report - Batch: 360-79030 Preparation: N/A

MS Lab Sample ID: 360-35898-1 Analysis Batch: 360-79030 Instrument ID: Lachat 8500 Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Leach Batch: N/A Initial Weight/Volume: 1.0 mL Analysis Date: 08/24/2011 1927 Final Weight/Volume: 10 mL

Prep Date: N/A Leach Date: N/A

N/A

MSD Lab Sample ID: 360-35898-1 Analysis Batch: 360-79030 Instrument ID: Lachat 8500 Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Leach Batch: N/A Initial Weight/Volume: 1.0 mL Analysis Date: 08/24/2011 1943 Final Weight/Volume: 10 mL

Analysis Date: 08/24/2011 1943 Final Weight/Volume: Prep Date: N/A

% Rec. Analyte MS MSD Limit **RPD RPD Limit** MS Qual MSD Qual Sulfate 104 104 75 - 125 0 20 Chloride 75 - 125 20 118 118 0

Leach Date:

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79061 Method: 300.0 Preparation: N/A

Lab Sample ID: MB 360-79061/4 Analysis Batch: 360-79061 Instrument ID: Lachat 8500 Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Leach Batch: Dilution: 1.0 N/A Initial Weight/Volume: 1.0 mL 08/24/2011 1823 Analysis Date: Units: mg/L Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date: N/A

RL RL Analyte Result Qual ND Nitrate as N 0.050 0.050

Lab Control Sample - Batch: 360-79061 Method: 300.0

Preparation: N/A

LCS 360-79061/5 360-79061 Lachat 8500 Lab Sample ID: Analysis Batch: Instrument ID: Client Matrix: Prep Batch: N/A Water N/A Lab File ID:

Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 1.0 mL Analysis Date: 08/24/2011 1839 Units: mg/L Final Weight/Volume: 10 mL

Prep Date: N/A Leach Date: N/A

Analyte Spike Amount Result % Rec. Limit Qual

Nitrate as N 85 - 115 4.00 4.16 104

Matrix Spike/ Method: 300.0 Matrix Spike Duplicate Recovery Report - Batch: 360-79061 Preparation: N/A

MS Lab Sample ID: 360-35898-1 Analysis Batch: 360-79061 Instrument ID: Lachat 8500

Water Client Matrix: Prep Batch: N/A Lab File ID: N/A Dilution: Leach Batch: N/A Initial Weight/Volume: 1.0 mL

08/24/2011 1927 Final Weight/Volume: 10 mL Analysis Date:

Prep Date: N/A Leach Date: N/A

Instrument ID: MSD Lab Sample ID: 360-35898-1 Analysis Batch: 360-79061 Lachat 8500 Client Matrix: Water N/A

Prep Batch: Lab File ID: N/A Dilution: Leach Batch: N/A Initial Weight/Volume: 1.0 mL 10

08/24/2011 1943 Analysis Date: Final Weight/Volume: 10 mL

Prep Date: N/A Leach Date: N/A

% Rec. Analyte MS MSD Limit **RPD RPD Limit** MS Qual MSD Qual

Nitrate as N 93 93 75 - 125 0 20

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79065 Method: 300.0 Preparation: N/A

Lab Sample ID: MB 360-79065/4 Analysis Batch: 360-79065 Instrument ID: Lachat 8500

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A Leach Batch: Dilution: 1.0 N/A Initial Weight/Volume: 1.0 mL 08/24/2011 1823 Analysis Date: Units: mg/L Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date: N/A

Analyte Result Qual RL RL

Nitrite as N ND 0.010 0.010

Lab Control Sample - Batch: 360-79065 Method: 300.0

Preparation: N/A

Lab Sample ID: LCS 360-79065/5 Analysis Batch: 360-79065 Instrument ID: Lachat 8500

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 1.0 mL

Analysis Date: 08/24/2011 1839 Units: mg/L Final Weight/Volume: 10 mL

Prep Date: N/A

Leach Date: N/A

Analyte Spike Amount Result % Rec. Limit Qual

Nitrite as N 4.00 4.24 106 85 - 115

Matrix Spike/ Method: 300.0

Matrix Spike Duplicate Recovery Report - Batch: 360-79065 Preparation: N/A

MS Lab Sample ID: 360-35898-1 Analysis Batch: 360-79065 Instrument ID: Lachat 8500 Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Leach Batch: N/A Initial Weight/Volume: 1.0 mL

Analysis Date: 08/24/2011 1927 Final Weight/Volume: 10 mL
Prep Date: N/A

Leach Date: N/A

MSD Lab Sample ID: 360-35898-1 Analysis Batch: 360-79065 Instrument ID: Lachat 8500 Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 10 Leach Batch: N/A Initial Weight/Volume: 1.0 mL

Analysis Date: 08/24/2011 1943 Final Weight/Volume: 10 mL

Prep Date: N/A
Leach Date: N/A

Analyte MS MSD Limit RPD RPD Limit MS Qual MSD Qual

Nitrite as N 110 111 75 - 125 0 20

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79183 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID: MB 360-79183/1-A Analysis Batch: 360-79216 Instrument ID: No Equipment

Client Matrix: Prep Batch: 360-79183 Lab File ID: N/A Dilution: Leach Batch: Initial Weight/Volume: 1.0 N/A 50 mL 08/30/2011 1458 Analysis Date: Units: mg/L Final Weight/Volume: 50 mL

Prep Date: 08/30/2011 1154

N/A

Leach Date: N/A

Leach Date:

 Analyte
 Result
 Qual
 RL
 RL

 Ammonia
 ND
 0.10
 0.10

Lab Control Sample - Batch: 360-79183 Method: L107-06-1B

Preparation: Distill/Ammonia

Lab Sample ID:LCS 360-79183/2-AAnalysis Batch:360-79216Instrument ID:No EquipmentClient Matrix:WaterPrep Batch:360-79183Lab File ID:N/A

Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: 50 mL

Analysis Date: 08/30/2011 1459 Units: mg/l Final Weight/Volume: 50 ml

Analysis Date: 08/30/2011 1459 Units: mg/L Final Weight/Volume: 50 mL Prep Date: 08/30/2011 1154

Analyte Spike Amount Result % Rec. Limit Qual
Ammonia 10.0 9.04 90 90 - 110

50 mL

50 mL

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79479 Method: L107-06-1B

Preparation: Distill/Ammonia

Final Weight/Volume:

Final Weight/Volume:

Lab Sample ID: MB 360-79479/1-A Analysis Batch: 360-79587 Instrument ID: Lachat Client Matrix: Water Prep Batch: 360-79479 Lab File ID: N/A Leach Batch: Dilution: 1.0 N/A Initial Weight/Volume: 50 mL

09/06/2011 1509 Analysis Date: Units:

09/02/2011 1415 Prep Date:

Leach Date: N/A

RL RL Analyte Result Qual ND Ammonia 0.10 0.10

mg/L

Lab Control Sample - Batch: 360-79479 Method: L107-06-1B

Preparation: Distill/Ammonia

LCS 360-79479/2-A 360-79587 Lab Sample ID: Analysis Batch: Instrument ID: Lachat Client Matrix: Prep Batch: 360-79479 N/A Water Lab File ID: 50 mL Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: Analysis Date: 09/06/2011 1510 Units: mg/L Final Weight/Volume: 50 mL

09/02/2011 1415

Prep Date:

Leach Date: N/A

Analyte Spike Amount Result % Rec. Limit Qual 90 - 110 Ammonia 10.0 9.33 93

Matrix Spike/ Method: L107-06-1B

Matrix Spike Duplicate Recovery Report - Batch: 360-79479 Preparation: Distill/Ammonia

MS Lab Sample ID: 360-35898-7 Analysis Batch: 360-79587 Instrument ID: Lachat Client Matrix: Water Prep Batch: 360-79479 Lab File ID: N/A Dilution: 5.0 Leach Batch: N/A Initial Weight/Volume: 50 mL

09/06/2011 1512 Analysis Date: 09/02/2011 1415 Prep Date:

Leach Date: N/A

Instrument ID: MSD Lab Sample ID: 360-35898-7 Analysis Batch: 360-79587 Lachat Client Matrix: Water N/A Prep Batch: 360-79479 Lab File ID:

Dilution: 5.0 Leach Batch: N/A Initial Weight/Volume: 50 mL 09/06/2011 1513 Final Weight/Volume: 50 mL

Analysis Date: 09/02/2011 1415 Prep Date:

Leach Date: N/A

% Rec. Analyte MS MSD Limit **RPD RPD Limit** MS Qual MSD Qual

Ammonia 145 152 90 - 110 1 20 4 4

Qual

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79387 Method: SM 2510B Preparation: N/A

Lab Sample ID: MB 360-79387/1 Analysis Batch: 360-79387 Instrument ID: hand held

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Leach Batch: N/A Initial Weight/Volume: Dilution: 1.0 09/01/2011 1215 Analysis Date: Units: umhos/cm Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date: N/A

Result Qual RL RL Analyte Specific Conductance ND 1.0 1.0

Lab Control Sample - Batch: 360-79387 Method: SM 2510B

Preparation: N/A

LCS 360-79387/2 360-79387 Instrument ID: hand held Lab Sample ID: Analysis Batch:

Client Matrix: Prep Batch: N/A Lab File ID: N/A Water

Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: Analysis Date: 09/01/2011 1215 Units: umhos/cm Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date: N/A

Analyte Spike Amount Result % Rec. Limit

Specific Conductance 1420 85 - 115 1410 100

Method: SM 2510B Duplicate - Batch: 360-79387 Preparation: N/A

Lab Sample ID: 360-35898-1 Analysis Batch: 360-79387 Instrument ID: hand held

Client Matrix: Water Prep Batch: N/A Lab File ID: N/A

Dilution: 1.0 Leach Batch: N/A Initial Weight/Volume: Analysis Date: 09/01/2011 1215 Units: umhos/cm Final Weight/Volume: 1.0 mL

Prep Date: N/A Leach Date:

RPD Analyte Sample Result/Qual Result Limit Qual

777

2

20

790

Specific Conductance

N/A

DILUTION LOGS

	:								1						Prof.	Analyst Initials		TestArr Analyth
		-							<u> </u>	1/				1	N-78-8	Date		TestAmerica Westfield Analytical Dilution Prep
	_								_	/'	-			7	300,0	Method		TestAmerica Westfield Analytical Dilution Preparation Log
									45 7	90	CS	とこ	63	< 2	1382858	LiMs Sample ID		g
							<u>.</u> 5		<u></u>	1					TOK	Rpt'd Dit.		
									2	_			_		_	Sample Aliquot 1		
									4						im's	Units		: [
					-				7						0	Final Volume 1		
									_	_					7,410	Units		
												1				Sample Aliquot 2		
												<u> </u>				Units	Serial Dilution	
														_		Final Volume 2	ilution	
				\ \ 				1								Units		Date:
									, , , , , , , , , , , , , , , , , , ,			**************************************				Comments		8.24-11
			ļ			<u> </u>												

Analytical Dilution Preparation Log TestAmerica Westfield

Analytio	l estAmerica Westheld Analytical Dilution Prep	Analytical Dilution Preparation Log										Date:	8.24-11
;										Serial Dilution	Dilution		
Analyst Initials	Date	Method	LIMs Sample ID	Rpť d Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Sample Allquot 2	Units	Final Volume 2	Units	Comments
E	8-24-11	800,0	1287861	YO!		-ym	<u>c</u>	Tim					
		7	2>										
			63										
			HO									ļ	
			CS					I					
	-		06	,],					
1	<	_	もつか	4	2	4	6						
						1							
						!				:			
				İ									

032**9**

TestAmerica Westfield

Analytical Dilution Preparation Log

Analytical Dilution Preparation Log	Preparation Lo	Ω.									Date:	8-30-4
									Serial Dilution	Mution		
Analyst Initials Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample	-	Final		Sample Aliquot 2	Units	Final .		
N. 2618 Bry	(NH3	1086856	LOY	_		ره	0,00					
		02	Xa)	_								
		104	×0)	1								
		, 05	Yal	(1						
2	1	90	42	2	L=	۷-	L			:		
							<u></u>					
											:	

TestAmerica Westfield Analytical Dilution Preparation Log

					412	E	2300	2	X	208884	いよが	9.6.2	E.
					L	_	L_	-	X01	7 510	}	1	<
								^	(0X				<u> </u>
								4	\ \ \ \	87			
	! 							62	₩ X	4			
							_	_	707	3>			
									(6 X	CX			
								4	×	27			
								2	٧ ٢	2)			
						-		((0×	C2			
						(0	_		(6X	3596261	とけら	Rove 9-6-1	Com
Comments	Units	Final Volume 2	Units	Sample Aliquot 2	Units	Final Volume 1	Units	Sample Aliquot 1	Rpt'd Dil.	LIMs Sample ID	Method	Date	Analyst Initials
		Serial Dilution	Seria) (
11-9-11	Date:	_								9	Analytical Dilution Preparation Log	al Dilution F	Analytic

State Accreditation Matrix

		Ctoto	uboro Brimar u	\ aaraditation ia (Carried
		New	where Primary /	Accreditation is (arried
		Hampshire			North
Method Name	Description	(NELAC)	Mass	Conn	Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 CI F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		Р		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		Р		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		Р		
1103.1	E.coli		ambient/		
Enterolert	Enterococcus		source		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		1
6010B	Metals (ICP)(list upon request)	NP/SW	,		†
245.1	Mercury (CVAA)	NP/P	NP		1
7470A	Mercury (CVAA)	NP			1
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		+
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			+
3010A	Preparation, Total Netcoverable of Dissolved Metals Preparation, Total Metals	NP/P		 	+
3020A	Preparation, Total Metals Preparation, Total Metals	NP/P/SW		 	1
3050B	Preparation, Metals	SW		 	+
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		+
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP	-	+
3546	Microwave Extraction	SW	111	-	+
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP		-	+
3550B	Ultrasonic Extraction	SW			+
8081A		NP/SW			+
8082	Organochlorine Pesticides (GC)(list upon request) PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	3 1 2 1 1 1	NP/SW			
	Semivolatile Comp.(GC/MS)(list upon request)	INF/SVV		NP/SW	
CT ETPH MA-EPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			INF/SW	NP/SW
	Mass - Extractable Petroleum Hydrocarbons (GC)	P	Р		INP/SVV
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	NP	NP		1
624	Volatile Org Comp (GC/MS)(list upon request)	SW	INF		
5035	Closed System Purge and Trap	NP			
5030B	Purge and Trap	NP/SW			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	INP/SVV			NP/SW
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)	P	Р		INF/SVV
180.1	Turbidity, Nephelometric	NP/P	NP/P		1
300	Anions, Ion Chromatography	NP/P NP			1
410.4	COD		NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW	ND		
10-107-06-2	Nitrogen, Total Kjeldahl	NP NP/0W	NP		
7196A	Chromium, Hexavalent	NP/SW			1
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW NP	P		1
L107041C	Nitrogen, Nitrate				
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P	_	
L210-001A	Phenolics, Total Recoverable	NP NB/B	NP	<u> </u>	
SM 2320B	Alkalinity	NP/P	NP/P		<u> </u>
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P	ļ	
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P	<u> </u>	
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		ļ
SM 3500 CR D	Chromium, Hexavalent	NP			1
SM 4500 H+ B	рН	NP/P	NP/P	ļ	1
SM 4500 NO2 B	Nitrogen, Nitrite	NP	Р	ļ	1
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		1
SM 4500 P E	Phosphorus, Total	NP	NP		<u> </u>
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory The lab carries additional accreditations with several states. This is the laboratories typical listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation Job Number: 360-35898-1

Login Number: 35898 List Source: TestAmerica Westfield

List Number: 1

Creator: Ard, Vanessa L

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Westfield

TestAmerica

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

Westfield Executive Park 53 Southampton Road Westfield, MA 01085

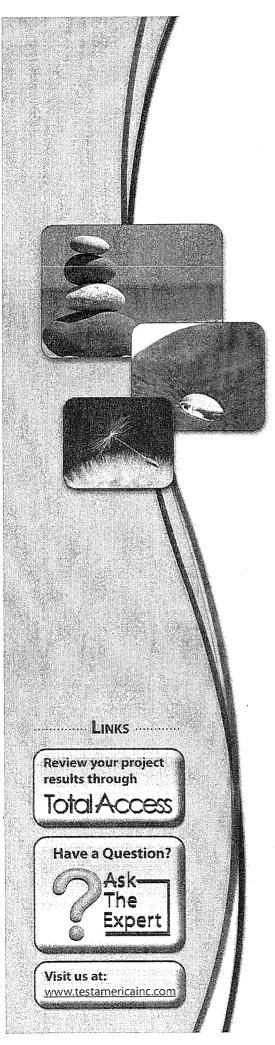
Phone (413) 572-4000 Fax (413) 572-3707

N - None
O - Asha02
O - Asha02
O - Na204S
O - Na25S03
R - Na25S03
T - TSP Dodecahydrate
V - MCAA
W - ph 4-5 Special Instructions/Note: Z - other (specify) Company Sample Disposal (A fee may be assessed it samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont reservation Codes: G - Amchlor H - Ascorbic Acid I - Ice Ox Ox Ox D - Nitric Acid E - NaHSO4 J - DI Water K - EDTA L - EDA МCР # qor page: 4 4 4 4 Total Rumber of containers 4 4 4 4 823/ Outerline: dethod of Shipment Carrier Tracking No(s) Cooler Temperature(s) °C and Other Remarks: Analysis Requested Special Instructions/QC Requirements: Lab PM: Mason, Becky C E-Malt: becky.mason@testamericainc.com × × × × × × × × × × × × × × × Сола,, 300.0 28DSO4/СІ, 300 48НРИОЗ/ИО2 × × × × × × × × × × × × × × × Ime Field Filtered Sample (Yes or No) (Wawater, Smolid, Owwanteroll, Preservation Code: Water Water Water Water Water Water Water Water Water Matrix water Water Company Company Bring of Lines of Cines 5 Radiological (C=comp, G=grab) Sample Type S P P P V P 9:35 Phone: 9:50 2:15 Sample Time アロシ 9:40 10:10 9:00 Date: Unknown TAT Requested (days): Duo Date Requested: 8-33-11 Date/Time: イマシュー 8-33-1) 2-33 II Sample Date 8-23-11 8-93-1 Pate/Time: C.23-f. Date/Time: 8-33-il 11-80-8 Po# REWI0013 Project #: 36001816 SSOW Poison B Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seale Intact: Custody Seal No.: ☐ Non-Hazard ☐ Flammable miland to me Phone: 978 658 613 Possible Hazard Identification Project Name: Olin Surface water Quaterly Empty Kit Relinquished by: Client Information Sample Identification Reinquished by: OC-SW-PZ-16RRSW OC-SW-PZ-17RRSW OC-SW-PZ-18RSW James Cashwell 51Eames Street OC-SW-ISCO3 OC-SW-ISCO2 OC-SW-SD-17 OC-SW-ISCO1 Сопрапу: Olin Corp Wilington OC-DUP State, Zip: dress:

> 49 of 49

Page



FILE COPY

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc. TestAmerica Westfield Westfield Executive Park 53 Southampton Road Westfield, MA 01085 Tel: (413)572-4000

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

TestAmerica Job ID: 360-35962-1

Client Project/Site: Olin Chemical Quarterly Groundwater

For:

Olin Corporation **PO BOX 248** Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell

Authorized for release by: 09/09/2011 02:00:24 PM

Joe Chimi

Report Production Representative ioe.chimi@testamericainc.com

Designee for

Becky Mason

Project Manager II

becky.mason@testamericainc.com

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature. Page 1 of 26

09/09/2011

2

Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Detection Summary	6
Method Summary	8
Sample Summary	9
Client Sample Results	10
Definitions	14
QC Association	15
QC Sample Results	17
Chronicle	20
Certification Summary	23
Receipt Checklists	25
Chain of Custody	26

4

5

6

8

9

10

12

13

Case Narrative

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Job ID: 360-35962-1

Laboratory: TestAmerica Westfield

Narrative

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

The samples were received on 08/25/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.1 C.

DISSOLVED METALS

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 09/01/2011.

Sample OC-GW-202D (360-35962-2)[2X] required dilution prior to analysis due to high non-target concentration. The reporting limits have been adjusted accordingly.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the dissolved metals analyses.

All quality control parameters were within the acceptance limits.

ANIONS (28 DAY HOLD TIME)

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/27/2011 and 08/31/2011.

Samples OC-GW-202S (360-35962-1)[10X], OC-GW-202D (360-35962-2)[10X], OC-GW-202D (360-35962-2)[50X], OC-GW-25 (360-35962-3)[10X], OC-GW-78S (360-35962-4)[10X], OC-GW-79S (360-35962-5)[10X], OC-GW-79S (360-35962-5)[20X], OC-PZ-16RR (360-35962-6)[10X], OC-PZ-17RR (360-35962-7)[10X], OC-PZ-18R (360-35962-8)[10X], OC-PZ-24 (360-35962-9)[10X] and OC-PZ-25 (360-35962-10)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

AMMONIA

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 09/02/2011 and analyzed on 09/06/2011.

Samples OC-GW-202S (360-35962-1)[10X], OC-GW-202D (360-35962-2)[10X], OC-GW-25 (360-35962-3)[5X], OC-GW-78S (360-35962-4) [5X], OC-GW-79S (360-35962-5)[10X], OC-PZ-16RR (360-35962-6)[10X], OC-PZ-17RR (360-35962-7)[5X], OC-PZ-18R (360-35962-8)[5X],

Case Narrative

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Job ID: 360-35962-1 (Continued)

Laboratory: TestAmerica Westfield (Continued)

OC-PZ-24 (360-35962-9)[10X] and OC-PZ-25 (360-35962-10)[10X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 09/01/2011.

Samples OC-GW-202D (360-35962-2)[5X], OC-GW-79S (360-35962-5)[2X] and OC-PZ-16RR (360-35962-6)[2X] required dilution prior to analysis due to high conductance. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

3

4

5

_

R

9

10

12

13

			Mass	DEP Analy	tica	l Protocol Cert	ificatio	on Form			
Labor	ratory N	Name:	TestAmeric	a Westfield		Project #	t :		360-3596	2-1	
Proje	ect Loc	ation:				RTN	l:				
This f	form p	rovide	s certifications for	the following	g data	a set: list Laborat	ory San	nple ID Nu	mber(s):		
360-3	5962-(_					
Matric	es:	X	Groundwater/Surfa	ce Water		Soil/Sediment	Drink	ing Water	∐Air		Other:
		cols	check all that ap								
8260			7470/7471 Hg	Mass DEP VI	PH	8081 Pesticides		Hex Cr	-		EP APH
CAM	II A SVOC		7010 Metals	CAM IV A Mass DEP EF		CAM V B 48151 Herbicides	CAM			CAM IX	
CAM			CAM III C	CAM IV B	-⊓ □	CAM V C		Explosives VIII A	٦	CAM IX	
O7						9014 Total				07 1111 17	<u> </u>
	Metals		6020 Metals	8082 PCB		Cyanide/PAC		Perchlorat	e		
CAM		Χ	CAM III D	CAM V A		CAM VI A	CAM				
	Affirm	native	Responses to Que	stions A thro	ugh l	F are required for	"Presu	mptive Cer	rtainty" sta	atus	
			nples received in a						•		
			served (including ter ing time.	nperature) in t	ne ne	eid of laboratory, ar	ia prepa	ared/analyzo	ea within	X Ye	s No
В			alytical method(s) a ollowed?	nd all associat	ed Q	C requirements sp	ecified i	n the select	ed CAM	XYe	s No
С			uired corrective acti	•		•			ted CAM	XYe	s 🗌 No
D		ty Ass	oratory report compurance and Quality (X Ye	s 🗌 No
E	modifi	cation	I and APH Methods (s)? (Refer to the ind TO-15 Methods only	dividual metho	d(s) f	or a list of significa	nt modi	fications).	! ?	☐ Yes	
F			licable CAM protoco a laboratory narrativ							XYes	s 🗆 No
	Re	espon	ses to Questions C	6, H and I belo	w ar	e required for "Pr	esumpt	tive Certair	nty" status	3	
G	protoc	ol(s)?	porting limits at or be							X _{Ye}	s No ¹
			ata that achieve "Pr requirements descr	•	-			-	data usabil	lity and	
			performance stand							X Yes	s No
ī			reported for the co	•		•			(s) ?	Yes	Γ. I
¹ All n	•		nses must be addre					р. отооо	.(0)	1	
obtain		inforn	attest under the pair nation, the material o								oonsible for
Signa				vintely) ynor	Position	n:	Quality	/ Assuranc	e Mana	ger
Printe	d Nam	e:	Christine	Reynolds	,	Date):		9/9/11 13	3:55	
This forn	n has bee	n electror	nically signed and approved								

9

TestAmerica Job ID: 360-35962-1

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

Client Sample ID: OC-GW-202S

Lab Sample ID: 360-35962-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	4.4	J	5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	380		20	20	mg/L	10	_	300.0	Total/NA
Chloride	60		10	10	mg/L	10		300.0	Total/NA
Ammonia	62		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-202D

Lab Sample ID: 360-35962-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	12000		200	25	ug/L	2	_	6010B	Dissolved
Chromium	930		10	1.3	ug/L	2		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1900		100	100	mg/L	50	_	300.0	Total/NA
Chloride	310		10	10	mg/L	10		300.0	Total/NA
Ammonia	190		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	4800		5.0	5.0	umhos/cm	5		SM 2510B	Total/NA

Client Sample ID: OC-GW-25

Lab Sample ID: 360-35962-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	1.8	J	5.0	0.65	ug/L	1	_	6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	91		2.0	2.0	mg/L	1	_	300.0	Total/NA
Chloride	100		10	10	mg/L	10		300.0	Total/NA
Ammonia	39		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	760		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-78S

Lab Sample ID: 360-35962-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	55	J	100	13	ug/L	1	_	6010B	Dissolved
Chromium	14		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	430		20	20	mg/L	10	_	300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	39		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1200		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-79S

Lab Sample ID: 360-35962-5

Analyte Chromium	Result 19	Qualifier	RL 5.0	MDL 0.65		Dil Fac	<u>D</u>	Method 6010B	Prep Type Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1000		40	40	mg/L	20	_	300.0	Total/NA
Chloride	190		10	10	mg/L	10		300.0	Total/NA
Ammonia	97		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	3000		2.0	2.0	umhos/cm	2		SM 2510B	Total/NA

Client Sample ID: OC-PZ-16RR

Lab Sample ID: 360-35962-6

TestAmerica Westfield 09/09/2011

Page 6 of 26

10

L107-06-1B

SM 2510B

Lab Sample ID: 360-35962-7

Lab Sample ID: 360-35962-8

Lab Sample ID: 360-35962-9

Lab Sample ID: 360-35962-10

Client: Olin Corporation

Ammonia

Specific Conductance

Project/Site: Olin Chemical Quarterly Groundwater

Client Samp	ole ID: O	C-PZ-16RR	(Continued)
-------------	-----------	-----------	-------------

160

3000

Client Sample ID: OC	-PZ-16RR (Continue	ed)				La	D: 360-35962-6		
Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	5.4		5.0	0.65	ug/L	1	_	6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	720		20	20	mg/L		_	300.0	Total/NA
Chloride	220		10	10	ma/l	10		300.0	Total/NA

1.0

2.0

1.0 mg/L

2.0 umhos/cm

Client Sample ID: OC-PZ-17RR

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	22	J	100	13	ug/L	1	_	6010B	Dissolved
Chromium	11		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	440		20	20	mg/L	10	_	300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	32		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1400		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-18R

Analyte Chromium	Result 12	Qualifier	RL 5.0	MDL 0.65		Dil Fac	<u>D</u>	Method 6010B	Prep Type Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	60		2.0	2.0	mg/L	1	_	300.0	Total/NA
Chloride	110		10	10	mg/L	10		300.0	Total/NA
Ammonia	33		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	810		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-24

	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	15	J	100	13	ug/L	1		6010B	Dissolved
Chromium	21		5.0	0.65	ug/L	1		6010B	Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	710		20	20	mg/L	10		300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	61		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	2000		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-25

Analyte Chromium	9.3	Qualifier	RL 5.0	MDL 0.65		Dil Fac	<u>D</u>	Method 6010B	Prep Type Dissolved
Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	420		20	20	mg/L	10	_	300.0	Total/NA
Chloride	22		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	43		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1400		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Total/NA

Total/NA

Method Summary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Method	Method Description	Protocol	Laboratory
6010B	Dissolved Metals	SW846	TAL WFD
300.0	Chloride & Sulfate	40CFR136A	TAL WFD
L107-06-1B	Nitrogen Ammonia	LACHAT	TAL WFD
SM 2510B	Conductivity, Specific Conductance	SM	TAL WFD

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

3

4

5

0

0

10

11

13

Sample Summary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
360-35962-1	OC-GW-202S	Water	08/24/11 11:10	08/25/11 16:05
360-35962-2	OC-GW-202D	Water	08/24/11 10:35	08/25/11 16:05
360-35962-3	OC-GW-25	Water	08/25/11 10:55	08/25/11 16:05
360-35962-4	OC-GW-78S	Water	08/24/11 09:00	08/25/11 16:05
360-35962-5	OC-GW-79S	Water	08/24/11 08:15	08/25/11 16:05
360-35962-6	OC-PZ-16RR	Water	08/24/11 07:15	08/25/11 16:05
360-35962-7	OC-PZ-17RR	Water	08/24/11 09:50	08/25/11 16:05
360-35962-8	OC-PZ-18R	Water	08/25/11 10:05	08/25/11 16:05
360-35962-9	OC-PZ-24	Water	08/25/11 08:25	08/25/11 16:05
360-35962-10	OC-PZ-25	Water	08/25/11 09:05	08/25/11 16:05

TestAmerica Job ID: 360-35962-1

Lab Sample ID: 360-35962-2

Matrix: Water

Matrix: Water

Matrix: Water

Matrix: Water

Matrix: Water

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

Method: 6010B - Dissolved Metals - Dissolved

Client Sample ID: OC-GW-202S Lab Sample ID: 360-35962-1

Date Collected: 08/24/11 11:10 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte RL MDL Unit Dil Fac Result Qualifier D Prepared Analyzed 100 Aluminum ND 13 09/01/11 16:06 ug/L 5.0 09/01/11 16:06 Chromium 4.4 J 0.65 ug/L

Client Sample ID: OC-GW-202D Date Collected: 08/24/11 10:35

Date Received: 08/25/11 16:05

Analyte RL MDL Result Qualifier Unit D Prepared Analyzed Dil Fac 200 25 12000 ug/L 09/01/11 17:53 **Aluminum** 2 Chromium 930 10 1.3 ug/L 09/01/11 17:53

Client Sample ID: OC-GW-25 Lab Sample ID: 360-35962-3

Date Collected: 08/25/11 10:55

Date Received: 08/25/11 16:05

Analyte RL MDL Unit Dil Fac Result Qualifier D Prepared Analyzed 100 Aluminum ND 13 09/01/11 16:21 ug/L 5.0 09/01/11 16:21 Chromium 1.8 J 0.65 ug/L

Client Sample ID: OC-GW-78S Lab Sample ID: 360-35962-4 **Matrix: Water**

Date Collected: 08/24/11 09:00

Date Received: 08/25/11 16:05

Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Aluminum 100 55 13 ug/L 09/01/11 16:23 Chromium 14 5.0 0.65 ug/L 09/01/11 16:23

Client Sample ID: OC-GW-79S Lab Sample ID: 360-35962-5 Date Collected: 08/24/11 08:15

Date Received: 08/25/11 16:05

RL MDL Unit Analyte Result Qualifier D Prepared Analyzed Dil Fac 100 ND 13 ug/L 09/01/11 16:26 Aluminum 5.0 09/01/11 16:26 Chromium 19 0.65 ug/L

Client Sample ID: OC-PZ-16RR Lab Sample ID: 360-35962-6

Date Collected: 08/24/11 07:15

Date Received: 08/25/11 16:05

MDL Unit Analyte RL Result Qualifier D Prepared Analyzed Dil Fac Aluminum ND 100 13 ug/L 09/01/11 16:29 Chromium 5.4 5.0 0.65 ug/L 09/01/11 16:29

Client Sample ID: OC-PZ-17RR Lab Sample ID: 360-35962-7

Date Collected: 08/24/11 09:50

Date Received: 08/25/11 16:05

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	22	J	100	13	ug/L			09/01/11 16:32	1

TestAmerica Job ID: 360-35962-1

Client: Olin Corporation Project/Site: Olin Chemical Quarterly Groundwater

Method: 6010B - Dissolved Metals - Dissolved (Continued)

Client Sample ID: OC-PZ-17RR Date Collected: 08/24/11 09:50

Lab Sample ID: 360-35962-7

Matrix: Water

Date Received: 08/25/11 16:05

RL Analyte MDL Unit Result Qualifier D Prepared Analyzed Dil Fac 5.0 0.65 09/01/11 16:32 Chromium ug/L 11

Lab Sample ID: 360-35962-8

Matrix: Water

Date Collected: 08/25/11 10:05 Date Received: 08/25/11 16:05

Client Sample ID: OC-PZ-18R

Analyte RL MDL Unit Result Qualifier D Prepared Analyzed Dil Fac 100 ND 09/01/11 17:44 Aluminum 13 ug/L Chromium 12 5.0 0.65 ug/L 09/01/11 17:44

Client Sample ID: OC-PZ-24 Lab Sample ID: 360-35962-9 Date Collected: 08/25/11 08:25

Matrix: Water

Date Received: 08/25/11 16:05

MDL Unit Analyte Result Qualifier RL D Prepared Analyzed Dil Fac Aluminum 15 100 13 ug/L 09/01/11 17:47 5.0 Chromium 21 0.65 ug/L 09/01/11 17:47

Client Sample ID: OC-PZ-25 Lab Sample ID: 360-35962-10

Date Collected: 08/25/11 09:05 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte RL MDL Unit Result Qualifier D Prepared Analyzed Dil Fac ND 100 Aluminum 13 ug/L 09/01/11 17:50 Chromium 9.3 5.0 0.65 ug/L 09/01/11 17:50

Project/Site: Olin Chemical Quarterly Groundwater

General Chemistry

Client Sample ID: OC-GW-202S Lab Sample ID: 360-35962-1 Date Collected: 08/24/11 11:10 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte	Result Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	380	20	20	mg/L			08/27/11 00:47	10
Chloride	60	10	10	mg/L			08/27/11 00:47	10
Ammonia	62	1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:55	10
Specific Conductance	1300	1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-GW-202D Lab Sample ID: 360-35962-2 Date Collected: 08/24/11 10:35 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1900		100	100	mg/L			08/31/11 21:38	50
Chloride	310		10	10	mg/L			08/27/11 02:24	10
Ammonia	190		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:56	10
Specific Conductance	4800		5.0	5.0	umhos/cm	1		09/01/11 12:15	5

Client Sample ID: OC-GW-25 Lab Sample ID: 360-35962-3

Date Collected: 08/25/11 10:55

Date Received: 08/25/11 16:05

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	91		2.0	2.0	mg/L			08/27/11 03:12	1
Chloride	100		10	10	mg/L			08/27/11 03:28	10
Ammonia	39		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 15:57	5
Specific Conductance	760		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-GW-78S Lab Sample ID: 360-35962-4 Date Collected: 08/24/11 09:00 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte RL **RL** Unit Result Qualifier D Prepared Analyzed Dil Fac 20 20 Sulfate 430 mg/L 08/27/11 04:00 1.0 08/27/11 03:44 1.0 mg/L 1 Chloride 23 **Ammonia** 39 0.50 0.50 mg/L 09/02/11 14:15 09/06/11 15:58 5

1200

Client Sample ID: OC-GW-79S Lab Sample ID: 360-35962-5

1.0

1.0 umhos/cm

Date Collected: 08/24/11 08:15

Specific Conductance

Date Received: 08/25/11 16:05

Analyte	Result	Qualifier RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1000	40	40	mg/L			08/31/11 21:54	20
Chloride	190	10	10	mg/L			08/27/11 04:33	10
Ammonia	97	1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:59	10
Specific Conductance	3000	2.0	2.0	umhos/cm			09/01/11 12:15	2

09/01/11 12:15

Matrix: Water

Matrix: Water

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

General Chemistry

Client Sample ID: OC-PZ-16RR Date Collected: 08/24/11 07:15

Lab Sample ID: 360-35962-6

Matrix: Water

Date Received: 08/25/11 16:05

Analyte	Result (Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	720		20	20	mg/L			08/27/11 05:37	10
Chloride	220		10	10	mg/L			08/27/11 05:37	10
Ammonia	160		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 16:00	10
Specific Conductance	3000		2.0	2.0	umhos/cm			09/01/11 12:15	2

Lab Sample ID: 360-35962-7

Matrix: Water

Client Sample ID: OC-PZ-17RR Date Collected: 08/24/11 09:50 Date Received: 08/25/11 16:05

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	440		20	20	mg/L			08/27/11 06:09	10
Chloride	23		1.0	1.0	mg/L			08/27/11 05:53	1
Ammonia	32		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 16:01	5
Specific Conductance	1400		1.0	1.0	umhos/cm			09/01/11 12:15	1

Lab Sample ID: 360-35962-8 Client Sample ID: OC-PZ-18R

Date Collected: 08/25/11 10:05 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte RL Result Qualifier **RL** Unit Dil Fac Analyzed Prepared 2.0 2.0 mg/L 08/27/11 06:25 Sulfate 60 Chloride 110 10 10 mg/L 08/27/11 06:42 10 0.50 09/06/11 16:02 **Ammonia** 33 0.50 mg/L 09/02/11 14:15 5 **Specific Conductance** 810 1.0 1.0 umhos/cm 09/01/11 12:15

Client Sample ID: OC-PZ-24 Lab Sample ID: 360-35962-9 Date Collected: 08/25/11 08:25 **Matrix: Water**

Date Received: 08/25/11 16:05

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	710		20	20	mg/L			08/27/11 07:14	10
Chloride	23		1.0	1.0	mg/L			08/27/11 06:58	1
Ammonia	61		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 16:03	10
Specific Conductance	2000		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-PZ-25 Lab Sample ID: 360-35962-10 **Matrix: Water**

Date Collected: 08/25/11 09:05

Date Received: 08/25/11 16:05

Analyte	Result Qualifier	RL	RL Unit	D Prepared	Analyzed	Dil Fac
Sulfate	420	20	20 mg/L		08/27/11 07:46	10
Chloride	22	1.0	1.0 mg/L		08/27/11 07:30	1
Ammonia	43	1.0	1.0 mg/L	09/02/11 14:15	09/06/11 16:04	10
Specific Conductance	1400	1.0	1.0 umhos/cm		09/01/11 12:15	1

Definitions/Glossary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
\	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit (Dioxin)
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or method detection limit if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

0

10

11

13

QC Association Summary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Metals

Analysis Batch: 79423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Dissolved	Water	6010B	
360-35962-1 DU	OC-GW-202S	Dissolved	Water	6010B	
360-35962-1 MS	OC-GW-202S	Dissolved	Water	6010B	
360-35962-2	OC-GW-202D	Dissolved	Water	6010B	
360-35962-3	OC-GW-25	Dissolved	Water	6010B	
360-35962-4	OC-GW-78S	Dissolved	Water	6010B	
360-35962-5	OC-GW-79S	Dissolved	Water	6010B	
360-35962-6	OC-PZ-16RR	Dissolved	Water	6010B	
360-35962-7	OC-PZ-17RR	Dissolved	Water	6010B	
360-35962-8	OC-PZ-18R	Dissolved	Water	6010B	
360-35962-9	OC-PZ-24	Dissolved	Water	6010B	
360-35962-10	OC-PZ-25	Dissolved	Water	6010B	
LCS 360-79423/1	Lab Control Sample	Total/NA	Water	6010B	
LCSD 360-79423/13	Lab Control Sample Dup	Total/NA	Water	6010B	
MB 360-79423/2	Method Blank	Total/NA	Water	6010B	

General Chemistry

Analysis Batch: 79282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	300.0	
LCS 360-79282/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79282/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 79283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batc
360-35962-2	OC-GW-202D	Total/NA	Water	300.0	
360-35962-3	OC-GW-25	Total/NA	Water	300.0	
360-35962-3	OC-GW-25	Total/NA	Water	300.0	
360-35962-4	OC-GW-78S	Total/NA	Water	300.0	
360-35962-4	OC-GW-78S	Total/NA	Water	300.0	
360-35962-5	OC-GW-79S	Total/NA	Water	300.0	
360-35962-6	OC-PZ-16RR	Total/NA	Water	300.0	
360-35962-7	OC-PZ-17RR	Total/NA	Water	300.0	
360-35962-7	OC-PZ-17RR	Total/NA	Water	300.0	
360-35962-8	OC-PZ-18R	Total/NA	Water	300.0	
360-35962-8	OC-PZ-18R	Total/NA	Water	300.0	
360-35962-9	OC-PZ-24	Total/NA	Water	300.0	
360-35962-9	OC-PZ-24	Total/NA	Water	300.0	
360-35962-10	OC-PZ-25	Total/NA	Water	300.0	
360-35962-10	OC-PZ-25	Total/NA	Water	300.0	
LCS 360-79283/6	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79283/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 79387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	SM 2510B	
360-35962-2	OC-GW-202D	Total/NA	Water	SM 2510B	
360-35962-3	OC-GW-25	Total/NA	Water	SM 2510B	
360-35962-3 DU	OC-GW-25	Total/NA	Water	SM 2510B	
360-35962-4	OC-GW-78S	Total/NA	Water	SM 2510B	
360-35962-5	OC-GW-79S	Total/NA	Water	SM 2510B	

estAmerica Westfield 09/09/2011

2

-

5

6

_

9

10

15

13

QC Association Summary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

General Chemistry (Continued)

Analysis Batch: 79387 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-6	OC-PZ-16RR	Total/NA	Water	SM 2510B	
360-35962-7	OC-PZ-17RR	Total/NA	Water	SM 2510B	
360-35962-8	OC-PZ-18R	Total/NA	Water	SM 2510B	
360-35962-9	OC-PZ-24	Total/NA	Water	SM 2510B	
360-35962-10	OC-PZ-25	Total/NA	Water	SM 2510B	
LCS 360-79387/2	Lab Control Sample	Total/NA	Water	SM 2510B	
MB 360-79387/1	Method Blank	Total/NA	Water	SM 2510B	

Analysis Batch: 79449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method Prep Bat	ch
360-35962-2	OC-GW-202D	Total/NA	Water	300.0	_
360-35962-5	OC-GW-79S	Total/NA	Water	300.0	
LCS 360-79449/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79449/3	Method Blank	Total/NA	Water	300.0	

Prep Batch: 79479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	Distill/Ammonia	
360-35962-2	OC-GW-202D	Total/NA	Water	Distill/Ammonia	
360-35962-3	OC-GW-25	Total/NA	Water	Distill/Ammonia	
360-35962-4	OC-GW-78S	Total/NA	Water	Distill/Ammonia	
360-35962-5	OC-GW-79S	Total/NA	Water	Distill/Ammonia	
360-35962-6	OC-PZ-16RR	Total/NA	Water	Distill/Ammonia	
360-35962-7	OC-PZ-17RR	Total/NA	Water	Distill/Ammonia	
360-35962-8	OC-PZ-18R	Total/NA	Water	Distill/Ammonia	
360-35962-9	OC-PZ-24	Total/NA	Water	Distill/Ammonia	
360-35962-10	OC-PZ-25	Total/NA	Water	Distill/Ammonia	
LCS 360-79479/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	
MB 360-79479/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 79587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	L107-06-1B	79479
360-35962-2	OC-GW-202D	Total/NA	Water	L107-06-1B	79479
360-35962-3	OC-GW-25	Total/NA	Water	L107-06-1B	79479
360-35962-4	OC-GW-78S	Total/NA	Water	L107-06-1B	79479
360-35962-5	OC-GW-79S	Total/NA	Water	L107-06-1B	79479
360-35962-6	OC-PZ-16RR	Total/NA	Water	L107-06-1B	79479
360-35962-7	OC-PZ-17RR	Total/NA	Water	L107-06-1B	79479
360-35962-8	OC-PZ-18R	Total/NA	Water	L107-06-1B	79479
360-35962-9	OC-PZ-24	Total/NA	Water	L107-06-1B	79479
360-35962-10	OC-PZ-25	Total/NA	Water	L107-06-1B	79479
LCS 360-79479/2-A	Lab Control Sample	Total/NA	Water	L107-06-1B	79479
MB 360-79479/1-A	Method Blank	Total/NA	Water	L107-06-1B	79479

2

4

5

7

0

10

12

13

TestAmerica Job ID: 360-35962-1

Client Sample ID: Method Blank

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

Method: 6010B - Dissolved Metals

Lab Sample ID: MB 360-79423/2

Matrix: Water

Analysis Batch: 79423

	Prep Type: Total/NA

мв мв RL MDL Unit Analyte Result Qualifier Dil Fac D Prepared Analyzed 13 ug/L Aluminum 100 ND 09/01/11 16:03 Chromium ND 5.0 09/01/11 16:03 0.65 ug/L

Lab Sample ID: LCS 360-79423/1 Client Sample ID: Lab Control Sample Prep Type: Total/NA

Matrix: Water

Analysis Batch: 79423

-	Spike	LCS	LCS				% Rec.	
Analyte	Added	Result	Qualifier	Unit	D	% Rec	Limits	
Aluminum	5000	5290		ug/L		106	80 - 120	
Chromium	1000	1020		ug/L		102	80 - 120	

Lab Sample ID: LCSD 360-79423/13 Client Sample ID: Lab Control Sample Dup Prep Type: Total/NA

Matrix: Water

Analysis Batch: 79423

	Spike	LCSD	LCSD				% Rec.		RPD
Analyte	Added	Result	Qualifier	Unit	D	% Rec	Limits	RPD	Limit
Aluminum	 5000	5210		ug/L		104	80 - 120	2	20
Chromium	1000	1000		ug/L		100	80 - 120	1	20

Lab Sample ID: 360-35962-1 MS Client Sample ID: OC-GW-202S **Prep Type: Dissolved**

Matrix: Water

Analysis Batch: 79423

•	Sample	Sample	Spike	MS	MS				% Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	% Rec	Limits		
Aluminum	ND		5000	5020		ug/L		100	75 - 125		_
Chromium	4.4	J	1000	983		ug/L		98	75 - 125		

Lab Sample ID: 360-35962-1 DU Client Sample ID: OC-GW-202S **Prep Type: Dissolved**

Matrix: Water

Analysis Batch: 79423

	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Aluminum	ND		 ND		ug/L		 NC	20
Chromium	4.4	J	4.52	J	ug/L		2	20

Method: 300.0 - Chloride & Sulfate

Lab Sample ID: MB 360-79282/3 Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 79282

	MB	MB							
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/26/11 18:37	1
Chloride	ND		1.0	1.0	mg/L			08/26/11 18:37	1

Lab Sample ID: LCS 360-79282/4 **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 79282

	Spike	LCS	LCS				% Rec.	
Analyte	Added	Result	Qualifier	Unit	D	% Rec	Limits	
Sulfate	80.0	84.7		mg/L	_	106	85 - 115	

Prep Type: Total/NA

TestAmerica Job ID: 360-35962-1

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

Method: 300.0 - Chloride & Sulfate (Continued)

Lab Sample ID: LCS 360-79282/4 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 79282

LCS LCS Spike % Rec. Analyte Result Qualifier Added Unit D % Rec Limits Chloride 40.0 42 4 106 85 - 115 mg/L

Lab Sample ID: MB 360-79283/5 Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 79283

	IVID	IVID							
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L	 _		08/27/11 01:36	1
Chloride	ND		1.0	1.0	mg/L			08/27/11 01:36	1

Lab Sample ID: LCS 360-79283/6

Matrix: Water

Analysis Batch: 79283

	Spike	LCS	LCS				% Rec.	
Analyte	Added	Result	Qualifier	Unit	D	% Rec	Limits	
Sulfate	 80.0	85.3		mg/L		107	85 - 115	
Chloride	40.0	42.7		mg/L		107	85 _ 115	

Lab Sample ID: MB 360-79449/3 Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 79449

мв мв

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/31/11 17:52	1
Chloride	ND		1.0	1.0	mg/L			08/31/11 17:52	1

Lab Sample ID: LCS 360-79449/4 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 79449

	Spike	LCS	LCS			% Rec.	
Analyte	Added	Result	Qualifier	Unit D	% Rec	Limits	
Sulfate	80.0	82.7		mg/L	103	85 _ 115	-
Chloride	40.0	40.8		mg/L	102	85 - 115	

Method: L107-06-1B - Nitrogen Ammonia

Lab Sample ID: MB 360-79479/1-A Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Water

Matrix: Water

Ammonia

Analysis Batch: 79587

MR MR

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac	
Δmmonia	ND		0.10	0.10	ma/l		09/02/11 14:15	09/06/11 15:09	1	

Lab Sample ID: LCS 360-79479/2-A Client Sample ID: Lab Control Sample

9.33

mg/L

Analysis Batch: 79587

Prep Batch: 79479 LCS LCS Spike % Rec. Analyte Added Result Qualifier Unit % Rec Limits

10.0

90 - 110

93

Prep Batch: 79479

Prep Type: Total/NA

Page 18 of 26

QC Sample Results

Client: Olin Corporation TestAmerica Job ID: 360-35962-1

Project/Site: Olin Chemical Quarterly Groundwater

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 360-79387/1 Matrix: Water

Analysis Batch: 79387

Prep Type: Total/NA

MB MB

AnalyteResultQualifierRLRLUnitDPreparedAnalyzedDil FacSpecific ConductanceND1.01.0umhos/cm09/01/11 12:151

Lab Sample ID: LCS 360-79387/2

Matrix: Water

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analysis Batch: 79387

 Spike
 LCS
 LCS
 % Rec.

 Analyte
 Added
 Result
 Qualifier
 Unit
 D
 % Rec.
 Limits

 Specific Conductance
 1410
 1420
 umhos/cm
 100
 85 - 115

Lab Sample ID: 360-35962-3 DU

Client Sample ID: OC-GW-25

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 79387

 Sample
 Sample
 DU
 DU
 RPD

 Analyte
 Result
 Qualifier
 Result
 Qualifier
 Unit
 D
 RPD
 Limit

 Specific Conductance
 760
 759
 umhos/cm
 0.4
 20

Specific Conductance 760 759 umhos/cm 0.4 2

10

Client Sample ID: Method Blank

Lab Chronicle

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Client Sample ID: OC-GW-202S Lab Sample ID: 360-35962-1

Date Collected: 08/24/11 11:10 Matrix: Water

Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B			79423	09/01/11 16:06	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79282	08/27/11 00:47	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:55	RWE	TAL WFD

Client Sample ID: OC-GW-202D Lab Sample ID: 360-35962-2

Date Collected: 08/24/11 10:35 Matrix: Water

Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		2	79423	09/01/11 17:53	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 02:24	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		5	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Analysis	300.0		50	79449	08/31/11 21:38	RWE	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:56	RWE	TAL WFD

Client Sample ID: OC-GW-25 Lab Sample ID: 360-35962-3

Date Collected: 08/25/11 10:55
Date Received: 08/25/11 16:05
Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:21	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 03:12	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 03:28	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 15:57	RWE	TAL WFD

Client Sample ID: OC-GW-78S Lab Sample ID: 360-35962-4

Date Collected: 08/24/11 09:00 Matrix: Water
Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B			79423	09/01/11 16:23	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 03:44	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 04:00	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 15:58	RWE	TAL WFD

Lab Chronicle

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

Client Sample ID: OC-GW-79S

Date Collected: 08/24/11 08:15

Date Received: 08/25/11 16:05

TestAmerica Job ID: 360-35962-1

Lab Sample ID: 360-35962-5

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B			79423	09/01/11 16:26	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 04:33	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		2	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Analysis	300.0		20	79449	08/31/11 21:54	RWE	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:59	RWE	TAL WFD

Client Sample ID: OC-PZ-16RR

Lab Sample ID: 360-35962-6

Date Collected: 08/24/11 07:15 Matrix: Water Date Received: 08/25/11 16:05

Batch Batch Dilution Batch Prepared Method Or Analyzed Prep Type Type Run **Factor** Number Analyst Lab 6010B 09/01/11 16:29 TAL WFD Dissolved Analysis 79423 TJS Total/NA Analysis 300.0 10 79283 08/27/11 05:37 RWE TAL WFD Total/NA Analysis SM 2510B 2 79387 09/01/11 12:15 AMS TAL WFD RWE TAL WFD Total/NA Prep Distill/Ammonia 79479 09/02/11 14:15 Total/NA Analysis L107-06-1B 10 79587 09/06/11 16:00 RWE TAL WFD

Client Sample ID: OC-PZ-17RR Lab Sample ID: 360-35962-7

Date Collected: 08/24/11 09:50 Matrix: Water Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:32	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 05:53	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 06:09	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 16:01	RWE	TAL WFD

Client Sample ID: OC-PZ-18R Lab Sample ID: 360-35962-8

Date Collected: 08/25/11 10:05 **Matrix: Water** Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B			79423	09/01/11 17:44	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 06:25	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 06:42	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 16:02	RWE	TAL WFD

Lab Chronicle

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Lab Sample ID: 360-35962-9

Matrix: Water

Date Collected: 08/25/11 08:25 Date Received: 08/25/11 16:05

Client Sample ID: OC-PZ-24

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B	· -	1	79423	09/01/11 17:47	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 06:58	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 07:14	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 16:03	RWE	TAL WFD

Client Sample ID: OC-PZ-25 Lab Sample ID: 360-35962-10

Date Collected: 08/25/11 09:05 Matrix: Water

Date Received: 08/25/11 16:05

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 17:50	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 07:30	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 07:46	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 16:04	RWE	TAL WFD

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

5

_

R

9

11

13

Certification Summary

Client: Olin Corporation

Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Λ

6

40

11

12

-4

9

10

12

13

		Otata	D.: A		N
		New Hampshire	where Primary A	ccreditation is (North
Method Name	Description	(NELAC)	Mass	Conn	Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 CI F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		Р		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		Р		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		Р		
1103.1	E.coli		ambient/		
Enterolert	Enterococcus		source		
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW	NID.		
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			!
3010A	Preparation, Total Metals	NP/P			!
3020A	Preparation, Total Metals	NP/P/SW			.
3050B	Preparation, Metals	SW	Б		!
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P NP		!
608	Organochlorine Pest/PCBs (list upon request)	NP			
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP SW			
3550B	Ultrasonic Extraction	_			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	INP/SVV		NP/SW	
CT ETPH MA-EPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			INF/SVV	NP/SW
524.2	Mass - Extractable Petroleum Hydrocarbons (GC)	P	P		INF/SVV
524.2 524.2	Volatile Org Comp (GC/MS)(list upon request) Trihalomethane compounds	P	P		
624	·	NP	NP		
5035	Volatile Org Comp (GC/MS)(list upon request) Closed System Purge and Trap	SW	INF		-
5030B	Purge and Trap	NP.			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)	,			NP/SW
180.1	Turbidity, Nephelometric	Р	P		,
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			İ
L107041C	Nitrogen, Nitrate	NP	Р		İ
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	Р	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	Р		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		

Not all organic compounds are accreditied under NELAC

For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory The lab carries additional accreditations with several states. This is the laboratories typical listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation Job Number: 360-35962-1

Login Number: 35962 List Source: TestAmerica Westfield

List Number: 1

Creator: Beaumier, Janine E

oreator. Deadiner, Janine L		
Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

9

5

6

8

10

13

Westfield Executive Park 53 Southampton Road Westfield, MA 01035
Phone (413) 572-4000 Fax (413) 572-3707

TestAmerica Westfield

Chain of Custody Record

TestAmerica : 116 LEADER IN GRANNEN TESTING

Phone (413) 572-4000 Fax (413) 572-3707							Ì						
Client Information	Semple:	Lab PM: Mason, I	secky (()			<u> </u>	arrier T	Carrier Tracking No(s)	:(s):		COC No:	
Client Contact James Cashwell	,	E-Mail: becky.m	ason@	testar	E-Mail: becky.mason@testamericainc.com	E C						Page:	
Company: Olin Corporation					An	Analysis		Requested	5			Job #:	
Address: 51 Eames Street	Due Date Requested:											Preservation Codes:	odes:
Oity: Wilington	TAT Requested (days):											B - NaOH C - Zn Acetate	N - None O - AshaO2
State, Zip: MA, 01887					1							D - Nitric Acid E - NaHSO4	P - Na2O4S Q - Na2SO3 B Na2SO3
Phone:	PO# REWI0013	(0			O/#O\$							G - Amehlor H - Ascorbic Acid	
Email: beguichard@olin.com	, MO #;	N 10 a		1	290								
Project Name: Olin Quarterly Groundwater	Project #: 36001816	eY) e l	miral recovery	O/IV P	0.00ε						enista		Z - other (specify)
Site:	;#MOSS	qms8		Oltere	··puo(03 10	Other:	
	Sample Type Sample (C=comp.	Matrix (Warmater, Sarolid, P. Command of the Comman	м\&М moha ACH_107_06	10B - Fleld	510B Spec. C						1edmu¥ leto		•
Sample Identification	Sample Date Time G=grab) gr=fisses, Ask	3		9 0	7 Z			180					Special Instructions/Note:
OC-6W-202S	shelp 1100	Water Y	<u>×</u>	×	×						۳ ا	MCP	
OC-GW-202D	\$ [2]	Water Y	×	×	×						es .	1 27052445	
OC-GW-25	125/11 10:	Water Y	×	×	×						က		
OC-GW-78S	3 11	Water	×	×	×						က		
OC-GW-79S	8/21/11 8215	Water	×	×	×						ന	3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
OC-PZ-16RR	11 7!	Water	×	×	×						ന		
OC-PZ-17RR	lijke	Water Y	×	×	×						ေ		
OC-PZ-18R	18/25/11/2005	Water	×	×	×								
ACTUDY.		Water	×	×	×		.,				m		
OC-PZ-24	ser 11/58 3	Water	×	×	×								***
OC-PZ-25		Water Y	×	×	×						8000000		
Possible Hazard Identification	□ Poison B □ Unknown □ Radiological		Sampl 	e Disy Zetur	oosaf (Af To Client	e may	be as	sesse	d if san Bv Lab	ne səldu	re retail	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month,	1 month) Months
ested: I, II, IV, Other (specify)			Specia	Instr	Special Instructions/QC Requirements:	Requi	emen	i.s					
Empty Kit Relinquished by:	Date:	Time:						We	Method of Shipment:	hipment	٠.		
Relinquished by	o chiel 11/58/15	Company	Rec	Received by	\$C		\ }			520/So	11/5	13:31	Company
Reinquished by	03/1/1/50	Company	Re	Refeived ;	Leas,	1	%				ړيرز	0081	
Relinquished by Land 20	East~ 11,:05 0	Сотрапу	Rec.	Recyfled	\mathcal{S}_{2}^{*}	60	B	DOLL	\$	Jate Time	192	10.91	Muramos S
Custogr Seaf Nutact (Custody Seal No.:			Ö	Cooler/Fer	emperature(s) °C and Other Remarks:	c and o	therRen	arks;	Ö.	, <u>ŏ</u> ′	ر ر	30 } } }	•
			14		12 13			10	9	.8	7	5	2 3 4